THE JOURNAL

of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 147, NO. 12 — CHICAGO, ILLINOIS — NOVEMBER 17, 1951

COPYRIGHT, 1951, BY AMERICAN MEDICAL ASSOCIATION

147
51

THE PRESENT OBLIGATION OF PHYSICAL MEDICINE AND REHABILITATION

CHAIRMAN'S ADDRESS

George Morris Piersol, M.D., Philadelphia, Pa.

It is a tradition of the American Medical Association for the Chairman of a Section of the Scientific Assembly to convey a message to his Section on the occasion of the Annual Meeting. It is the prerogative of the Section Chairman to exercise free choice in the selection of a subject.

It is only within the recent past that the field of physical medicine and rehabilitation has been given long overdue recognition as an accredited medical specialty. Such recognition, gratifying as it is, carries with it increased responsibilities and definite obligations. It seems appropriate, therefore, at this time, to discuss certain obligations which confront us.

The obligations which physical medicine must meet fall into two categories: (1) those of immediate concern, the result of present circumstances, and (2) long range obligations which have developed insidiously, are of indefinite duration, and continuously tax us.

When the tranquility of our proverbially complacent country was rudely disturbed over a year ago by events of world-wide military, economic and political significance, there arose problems of immediate concern to physical medicine. The ever-rising toll of casualties from the Korean theater of operations emphasizes clearly certain responsibilities which physical medicine must assume in this national emergency. The sharp upturn in the number of those who will require rehabilitation is and will continue to be a problem to the Armed Services and the Veterans Administration. To meet this added burden, a prompt and substantial increase in qualified professional personnel to properly staff departments of physical medicine in governmental hospitals is essential.

A recent statement by Colonel E. M. Smith, of the Office of the Surgeon General of the Army, indicates that the Army under present conditions is experiencing a shortage of physiatrists. As of this month, in that branch there are 59 vacancies for medical officers in physical medicine. Dr. A. B. C. Knudson points out that among 150 hospitals and 16 domiciliary homes conducted by the Veterans Administration, with a total patient load of about 123,134 individuals, there are presently vacancies for 56 Chiefs of Physical Medicine and Rehabilitation and for five Assistant Chiefs. Knudson goes on to show that with the transfer of Korean casualties to the Veterans Administration the demand for physiatrists will become even greater. In the Air Force, the Navy, and the Public Health Service, doubtless a similar significant shortage exists of professional personnel qualified in physical medicine. To meet this lack in these governmental agencies is an inescapable obligation upon physical medicine.

The continuation of the present military situation creates the added responsibility of returning an increasing number of handicapped individuals to gainful occupations and industry. Although other groups share this problem, it is, nevertheless, the physiatrists who are looked to for leadership in the rehabilitation of disabled.

The foregoing comments are equally applicable to ancillary technical groups, such as physical and occupational therapists. At the present time the Army Medical Service has vacancies for 146 physical therapists, 155 occupational therapists and 16 reconditioning officers. A similar situation exists in the Veterans Administration, in which the chronic shortage of technical personnel is increased by constant loss of therapists and others into the Armed Forces. Although this shortage of therapists may not be primarily the problem of physiatrists, we cannot be indifferent to such a critical situation. The more so, since in many instances we have elected to assume a directing and advisory function in the training of physical and occupational therapists.

While we are concerned with the problem of providing professional and technical personnel to meet the present somewhat static situation, we must not overlook the grim possibility that at any moment we may be faced

From the Center for Instruction and Research in Physical Medicine and Rehabilitation, University of Pennsylvania.
Read before the Section on Physical Medicine and Rehabilitation at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

with a devastating catastrophe to some part of our civilian population.

In the event of such a tragedy, the role of the physiatrist, primarily a trained physician, is not difficult to envision. His place in any civilian defense program should have been predetermined and his duties assigned according to his ability and training. Immediately after a bombing attack it is unlikely that physical medicine will play much of a part in the care of the victims. On the other hand, in their after-care the physiatrist will find ample opportunity to exercise his special skill.

The most advantageous way to employ therapists in the event of a civilian disaster requires thoughtful consideration. In the course of their training, they have received some medical experience. It would be wasting their talents to employ them in duties that can be carried out equally well by personnel not so trained. Physical and occupational therapists should make valuable additions to first-aid teams and other technical groups.

In this connection, a plan devised by Dr. K. G. Hansson of New York deserves attention. He has enlisted the interest of his therapists in organizing teams trained in the manual methods of administering artificial respiration. Such a forehanded plan of preparedness with a little ingenuity can be modified to include the training of selected groups in various lifesaving emergency procedures.

The obligations of physical medicine are not limited to the circumstances that have grown out of what we hope is a temporary situation. Of even greater importance and of more far-reaching significance are the obligations which fall within the second category. These are not the outcome of military and political activities. Paradoxically, these obligations are imposed upon us by the dramatic progress that has been made in the medical and social sciences and in public health. These advances have resulted in such an increase in life expectancy that we are fast becoming a nation of old people. Recent statistics show that in the United States the average age of life now has reached 67.2 years.

This has an important bearing upon the problems of physicial medicine. As more people survive to old age, the greater becomes the incidence in our population of chronic degenerative diseases. Since physical medicine, as presently understood, offers the most rational approach to the management of this group of individuals, physiatrists will be called upon more and more to care for the chronically ill. Even now this is occurring, and, as years go on, physiatrists can be expected to assume even greater obligations for the supervision of our aging citizens. To meet this need, broad rehabilitation programs will have to be developed. To direct and effectively carry them on will require substantial increases in the number of professionally and technically qualified men and women trained in the art of "dynamic medicine." To provide such personnel is our challenge.

The obligations of physical medicine arising from the care of our civilian population are not limited to the treatment and reeducation of the chronically ill. To that load must be added the stupendous number of those injured in accidents that annually place such a huge medical and economic burden upon our nation. It is this group of disabled persons, independent of any military situation, which imposes continuous obligations on physical medicine.

It is generally admitted that the civilian needs for physicians and therapists qualified in physical medicine far exceed those of the governmental agencies. This is borne out by the inability of hospitals and other institutions, prepared to establish departments of physical medicine, to complete their plans because suitable personnel is unobtainable.

Whether viewed from the standpoint of the needs of the present situation or the requirements of the future, it is evident that shortage of trained personnel is the outstanding problem, which today limits expansion in our field. The great justification for physical medicine is its essential role in the restoration of the sick and disabled to useful living. Since the success of such a program is dependent largely upon enough qualified professional personnel, it follows that the greatest present obligation of those dedicated to physical medicine and rehabilitation is to overcome this deficiency.

The solution of this problem may be stated in the single word "education." Broadly considered, the word implies arousing among physicians, students of medicine, and the public an interest in, and appreciation of, the requirements and potentialities of broad, well integrated reconditioning programs.

Progress in education and organization in the field of physical medicine during the last five years has been noteworthy. Under the leadership of the Baruch Committee on Physical Medicine and Rehabilitation, the National Foundation for Infantile Paralysis, other foundations and special groups, outstanding advances, especially in rehabilitation, have been made. Dr. Frank H. Krusen in a recent statement lists among the accomplishments that may be credited to physical medicine (1) increased interest in the teaching of this subject in our medical schools, (2) the establishment of residencies in physical medicine and rehabilitation, (3) the organization of an American Board of Physical Medicine and Rehabilitation, (4) the creation of this new section of the American Medical Association, (5) the development of community rehabilitation centers throughout the country, and, most significantly, (6) the recognition of physical medicine and rehabilitation as a "new reorganized medical specialty."

In spite of all the advantages inherent in modern physical medicine, the medical profession, as a whole, continues to lack enthusiasm for this field.

It is still more surprising that with the educational and professional opportunities now open to them, younger physicians show an apathy and even an indfference to entering this specialty.

The present residency situation in physical medicine bears witness to this. A recent survey of educational facilities in physical medicine shows that in nonfederal medical institutions there are available 62 approved residencies, of which 34 are now filled. In addition, in 1950 there were 12 residencies in three approved Army hospitals and 16 more available in 10 approved Veterans Administration hospitals. Information as to the number of residencies filled in the Army hospitals was not available and only five of the Veterans Administration resi-

V 14
1951

dencies were reported filled. There are approximately 90 approved residencies available in this country in addition to a varying but considerable number of fellowships in Physical Medicine and Rehabilitation. This is encouraging evidence of educational progress when one considers that eight years ago only five approved residencies and fellowships were offered. It is discouraging, however, that with all of these opportunities available, at least 50% of the residencies are allowed to go begging. The attitude causing this, in the group of physicians whom it is vitally necessary for us to interest in physical medicine, has disturbing implications. It is the young men to whom we must turn to meet critical shortages in our federal and civilian medical institutions and to provide the teachers that will be required to train and educate future physiatrists.

Enrollment in long systematic courses in physical medicine and rehabilitation offered by graduate schools of medicine has been disappointing. The number of physicians seeking such graduate training is insignificant compared to the number of those who matriculate in the better-established specialties. Refresher courses in physical medicine of a few days or week's duration have fared somewhat better. Even such instruction has failed to reach the segment of the profession for which it was planned.

Certification in physical medicine, as in every other specialty, is becoming more and more a necessity as governmental and private agencies continue to insist upon it as a prerequisite to responsible professional positions. The requirements of the American Board of Physical Medicine and Rehabilitation, as now stated, make it almost obligatory for prospective candidates to have completed an approved residency and to have had some graduate training, especially in the basic medical sciences. Recent information indicates that annually an average of 30 to 35 physicians appear before the Board and of that number as a rule about one-third fail to qualify. Such being the case, if the number of physicians who become certified each year does not show a prompt and considerable increase, it will be a long time before we can hope to meet the demand for certified physiatrists. The solution of this problem is one of our obligations. It must be accomplished without lowering in any way the educational and professional standards that have been established.

With physiatrists in such demand and the opportunities in physical medicine and rehabilitation so great, it is pertinent to ask why there is a lag in professional recruitment in this field. Several reasons come to mind. There are certain characteristics peculiar to the specialty of physical medicine. It is not an isolated activity, it cuts across practically every branch of medicine. This requires of physiatrists a broader and more varied clinical experience than is expected in other specialties. The practice of physical medicine consists largely of referred patients; therefore, the physiatrist finds himself dependent upon other physicians, too many of whom believe themselves competent to carry on physical forms of treatment. Unlike most specialties in which the technical and operative procedures are carried out wholly by the physician, much of the therapy, even though directed by the doctor, is delegated to and actually performed by, technical personnel. This necessitates the employment of registered therapists with the financial obligations thereby entailed. The specialty is not well adapted to individual private practice, particularly in smaller communities. There are, however, notable exceptions to this statement. It is essentially an institutional activity because of the expenses involved. Therefore, a hospital appointment is almost as necessary to the physiatrist as it is to the surgeon. Moreover, because physical medicine is not appreciated by physicians generally, the physiatrist often finds himself on the defensive. Although the more important appointments in physical medicine are for the most part reasonably well compensated, the possibility for outstanding financial success in this specialty is hardly comparable to that attainable in many other special fields. Regardless of their validity, these and other objections are advanced by some physicians. It is our obligation to silence such criticism and to correct conditions which may deter those who contemplate becoming physiatrists. To do this requires, above all, better education and training of young men in physical medicine.

The first remedial step is to expand in our undergraduate medical schools the teaching of physical medicine. An encouraging start has already been made. Whereas in 1944 only 42% of our medical schools offered any kind of instruction in physical medicine today, according to the survey of the Advisory Committee on Education of the American Medical Association, of the 72 recognized medical schools circularized, 45 are listed as teaching physical medicine and rehabilitation at an undergraduate level. Of these, 37 maintain separate departments of physical medicine and 17 medical schools list graduate courses of one kind or another. Each year this record improves. As physical medicine becomes better recognized the scope of undergraduate teaching in this subject will be extended. Physical medicine should be integrated with other subjects throughout the undergraduate years, so that the student learns to look upon it as an indispensable part of medicine.

In order that education in physical medicine should continue, a tour of duty in that department should be made a part of the training program of every intern. Such a plan is difficult to carry out because many hospitals, even among the 1,079 approved last year for residencies or fellowships, do not have departments of physical medicine, let alone rehabilitation facilities. A remedy for this will be found when those responsible for hospital evaluation are in a position to insist that, at least in the case of the larger teaching institution, an adequate department of physical medicine be one of the prerequisites for approval. More attention will be paid to intern training in physical medicine when the several licensing boards make such training a requisite part of an acceptable internship program.

More familiarity with physical medicine will encourage interns to seek residencies in this field. Residency programs must be made stimulating and instructive. They should provide a systematic review of basic medical sciences as well as supervised and varied clinical experience. Interest in residencies will be increased when more hospitals allocate beds to physical medicine and rehabilitation. Such a plan gives residents a chance for

detailed study of patients and personal responsibility for their medical management. In order to broaden their medical outlook residents in physical medicine should rotate through other hospital services for significant periods. Moreover, they should be given opportunity for investigation. Greater attention to educational efforts such as these mentioned are necessary if we hope to make up the critical shortage of medical personnel by attracting younger physicians into physical medicine.

Before a physician takes up a specialty he should be certain that it has public as well as professional approval and support. This is especially true of our recently recognized specialty. It is proper, therefore, that those who elect to enter physical medicine should do so with the knowledge that their academic advancement and economic security is assured. To accomplish this calls for our continued active efforts to arouse civic interest in physical medicine. By so doing we shall aid in bringing about the long overdue establishment of more rehabilitation centers and the further development of departments of physical medicine in hospitals throughout the country. This in turn will enable physiatrists to work under proper, congenial conditions and to receive compensation commensurate with their ability and the responsibility they assume.

An effort has been made to indicate some of the obligations which face physical medicine. The underlying problems involved are many and complicated. Their solution is difficult and will require time, wisdom, and well directed effort. The record of our past accomplishments leaves no doubt but that the present and future obligations of physical medicine will be met successfully.

3400 Spruce St.

PITUITARY DWARFISM

RESULTS OF TREATMENT OF TEN PATIENTS

CHAIRMAN'S ADDRESS

James A. Greene, M.D., Houston, Texas

Dwarfism has been known throughout recorded history, but the relation of the pituitary to certain kinds of dwarfism has been recognized only recently. Evans and Long [1] accelerated the growth of normal rats by the injection of a saline extract of the anterior pituitary gland of the ox, and this was later confirmed by Smith.[2] Such observations were encouraging in regard to the possibility of a treatment for patients with pituitary dwarfism, and the isolation of the pure growth hormone by Li and Evans [3] offered added encouragement. In the mid 1930's crude extracts of the anterior pituitary gland, in which the growth hormone was slightly more concentrated than in other crude extracts, became available and were tried by several investigators. Engelbach and Schaefer,[4] Turner,[5] and Schaefer [6] reported growth in pituitary dwarfs following the administration of these extracts. Certain metabolic alterations were observed by Schaefer [6] following the use of the extracts, but Bulger and Barr [7] were unable to confirm these observations. Greene and Johnston [8] obtained an immediate effect of a decrease in the storage of nitrogen, sulfur, calcium, and phosphorus following the administration of a crude extract and a later effect of storage of these substances. The results of studies by other investigators have been conflicting also, as well as the results of treatment. Most authors agree that the growth hormone of the anterior pituitary gland plays an important role in the growth of the human. Grollman,[9] on the other hand, states that the pituitary cannot accurately be considered as a regulator of growth since this may proceed in the absence of pituitary secretions. I have followed 10 patients with pituitary dwarfism during the past few years for periods of from three months to five years, and the results obtained from treatment and some of the problems encountered are the bases for this report.

From the Department of Medicine, Baylor University College of Medicine, and Hermann Hospital.

Read before the Section on Experimental Medicine at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

1. Evans, H. M., and Long, J. A.: Effect of Anterior Lobe Administered Intraperitoneally upon Growth, Maturation and Oestrous Cycles of the Rat, Anat. Record **21**: 62-63, 1921.

2. Smith, P. E.: Disabilities Caused by Hypophysectomy and Their Repair: The Tuberal (Hypothalamic) Syndrome in the Rat, J. A. M. A. **88**: 158-161 (Jan. 15) 1927.

3. Li, C. H., and Evans, H. M.: Isolation of Pituitary Growth Hormone, Science **99**: 183-184, 1944.

4. Engelbach, W., and Schaefer, R. L.: Endocrine Dwarfism, Endocrinology **18**: 387-392, 1934.

5. Turner, H. H.: Anterior-Pituitary Dwarfism: Further Report of Cases Treated with the Growth Hormone, South. M. J. **28**: 309-316, 1935.

6. Schaefer, R. L.: Endocrine Dwarfism, Endocrinology **20**: 64-71, 1936.

7. Bulger, H. A., and Barr, D. P.: Metabolic Studies of Pituitary Insufficiency, Endocrinology **20**: 137-148, 1936.

8. Greene, J. A., and Johnston, G. W.: Metabolic Changes by Extracts of Anterior Hypophysis in Primary-Pituitary and in Nonpituitary Dwarfs, J. Clin. Endocrinol. **1**: 327-330, 1941.

9. Grollman, A.: Dwarfism, Oxford Med. **3** (pt. 2): 1084, 1942.

REPORT OF CASES

CASE 1.—A white girl, 17, had retarded growth since birth, and at 9 years she was approximately the size of a 6-year-old person and grew very little after that time. She was 50 in. (127 cm.) tall; her family were of normal size. She had never menstruated. The sella turcica was normal, and the epiphyseal age corresponded to a chronological age of 15. She responded to treatment at first, but later growth ceased. She grew 2 in. (5.08 cm.) in eight months and then did not grow for 35 months (shown in the Table). The epiphyses were still open.

CASE 2.—A white boy, 16, was a premature baby, and at 6 years his physician noted that he was retarded in growth. He received 3 grains (0.065 gm.) of desiccated thyroid daily and 6 cc. of a gonadotropic pituitary extract weekly for 17 months without obvious effect. His stamina was as good as his brothers and playmates. He was 53 in. (134.62 cm.) tall, and his family were of average size. The sella turcica was normal, and the epiphyseal age corresponded to a chronological age of 12. He responded to treatment and grew 2⅜ in. (6.40 cm.) in 21½ months (as shown in the Table). The epiphyses were still open.

CASE 3.—A white boy, 10, was a premature baby and was always small. He had not grown for two or three years before admission and was 47½ in. (119.65 cm.) tall. His family were of average height. The sella turcica was large with the posterior clinoid processes obscured, and the epiphyseal age corresponded to a chronological age of 5 years. He responded to treatment and grew 9¾ in. (24.77 cm.) during 53 months. The epiphyses were open (Table).

CASE 4.—A white girl, 20, developed normally until 12, when she ceased to grow. She had received treatment from her physician (shown in the Table). She was 52¾ in. (133.99 cm.) tall, and her family were of average size. The sella turcica was small, and most of the epiphyses of the long bones were open. At the end of treatment (Table) the epiphyses were practically closed, and the patient had grown approximately 5¾ in. (14.61 cm.).

Treatment and Response in Ten Cases of Pituitary Dwarfism

Case	Age	Sex	Pituitary Extract, Weekly Rat Units	Treatment Duration, Mo.	Growth, In.	Added Daily Therapy	Total Growth, In.
1	17	F	90	8	2	.....	...
1	18	F	40	7	0	.....	...
1	18	F	40	18	0	1 grain thyroid	...
1	21	F	90	10	0	1 grain thyroid	2
2	16	M	90	10	0	.....	...
2	17	M	90	4	0	30 mg. methyltestosterone	...
2	17	M	90	4	¾	30 mg. methyltestosterone	...
2	17	M	90	31½	2	30 mg. methyltestosterone	2¾
3	10	M	60	8	¾	2 grain thyroid	...
3	10	M	300	8	1	1 grain thyroid	...
3	11	M	600	7	1¼	1 grain thyroid	...
3	12	M	600	6	1½	1 grain thyroid	...
3	13	M	600	12	2¼	30 mg. testosterone	...
3	14	M	600	12	2	30 mg. testosterone	9¾
4	17	F	?	24?	2	30 mg. testosterone	...
4	19	F	?	12	¾	Estrogen	...
4	20	F	60	5	1	.....	...
4	20	F	60	12	2?	.....	...
4	21	F	60	5	0	Estrogen	5¾
5	12	M	900	20	5	.....	...
5	14	M	900	12	2	.....	...
5	15	M	900	2	0	.....	...
5	15	M	900	5	1⅜	30 mg. testosterone	...
5	15	M	900	1½	⅝	30 mg. testosterone	...
5	16	M	900	8	2¾	30 mg. testosterone	...
5	16	M	900	1	1¼	30 mg. testosterone	...
5	16	M	900	4	0	30 mg. testosterone	...
5	17	M	900	8	1½	30 mg. testosterone	14½
6	25	M	60	4	1½	30 mg. testosterone	...
6	25	M	60	4	½	.....	...
6	25	M	0	4	0	.....	...
6	26	M	60	4	½	.....	...
6	26	M	60	3	1	.....	...
6	26	M	60	4	1	.....	...
6	27	M	60	24	1	.....	5½
7	17	M	110	3	1½	.....	1½
8	17	F	110	6½	1	1 grain thyroid	...
8	18	F	60	36	6	1 grain thyroid	7
9	26	M	105	3	1¼	.....	...
9	26	M	60	7	⅝	.....	...
9	27	M	60	6	⅜	.....	...
9	27	M	60	8	¾	.....	3½
10	21	M	700	2	½	.....	...
10	21	M	700	3	¼	225 mg. methyltestosterone pellet	...
10	21	M	0	2½	¼	225 mg. methyltestosterone pellet	...
10	21	M	0	6	½	225 mg. methyltestosterone pellet	...
10	23	M	0	20	0	.....	...
10	23	M	60	4	¼	.....	1¾

CASE 5.—A Negro boy, 14, was noted to be retarded in growth at 5 years, and ceased growing at 9 years. He was 42 in. (106.68 cm.) tall, and his family were of normal size. The sella turcica was normal, and the epiphyseal age corresponded to a chronological age of 7 or 8 years. He responded to treatment and grew 14½ in. (36.83 cm.) during 54½ months (as shown in the Table). The epiphyses were beginning to close.

CASE 6.—A white man, 25, was of normal size until diabetes mellitus developed 10 years before and he ceased growing. There was pain on motion and crepitation on flexion in all the joints of the hands. The sella turcica was normal, and the epiphyseal age corresponded to a chronological age of 17. The patient responded to treatment and grew 5½ in. (13.97 cm.) and developed sexually during 47 months (Table). The epiphyses closed.

CASE 7.—A white boy, 17, was thought to be normal in size until he was 9 or 10 years. Growth completely ceased at 14. His family were of average size, and he was 61½ in. (156.21 cm.) tall. The sella turcica was normal. The epiphyseal age corresponded to a chronological age of 12. He responded to treatment and grew 1½ in. (3.81 cm.) during three months (Table).

CASE 8.—A white girl, 17, was always small but ceased growing when diabetes mellitus developed. After the diabetes was controlled, she grew but never menstruated. Her family were of normal size, and she was 53½ in. (130.81 cm.) tall. The sella turcica was normal, and the epiphyseal age corresponded to a chronological age of 12. The patient responded to treatment and grew 7 in. (18 cm.) and developed sexually during 40½ months (Table). The epiphyses closed.

CASE 9.—A white man, 26, was of normal size until 5 years but then continued to grow only gradually until 20, when growth ceased. Pain on motion of the hips was noted, and it was believed the patient had cretinism; however, he failed to respond to three years of adequate thyroid therapy. The hip condition was then diagnosed as Legg-Calvé-Perthes disease. He had not developed sexually and was 57¾ in. (146.69 cm.) tall, although his family were of normal size. The sella turcica was normal, and the epiphyseal age corresponded to a chronological age of 14. The patient responded to treatment and grew 3½ in. (8.89 cm.) and developed sexually during 26 months. The epiphyses closed.

CASE 10.—A white man, 20, was of normal size until 15, when growth ceased. He began to note localizing signs of a pituitary tumor two years later. A cystic tumor encroaching upon the pituitary was found and removed. He was 61¾ in. (156.85 cm.) tall and sexually underdeveloped. The epiphyseal age corresponded to a chronological age of 16. The patient responded to treatment and grew 1¾ in. (4.45 cm.). The epiphyses were closing.

The factors which influence the rate and duration of growth in man are complex, and the height attained depends on both the rate and duration of growth of the skeletal system. A proper and adequate diet which is absorbed and utilized normally is necessary for maximum growth. The capacity of the skeletal system to grow and its sensitiveness to growth stimulation are also important factors. Any disease—such as diabetes mellitus, disturbance in calcium and phosphorus metabolism, congenital heart disease, allergy, or certain chronic infections—may retard or stop growth. In addition, certain of the endocrine glands play important roles, and their influence is difficult to evaluate. Hypothyroidism causes retardation or cessation of growth, which is resumed with replacement therapy. It is doubtful, however, that a cretin will attain the maximum height if treatment is delayed too long. Hypothyroidism is present in many pituitary dwarfs, but thyroid therapy alone does not accelerate growth in these instances, as shown in Cases 2 and 9 of this series. The addition of thyroid to growth hormone therapy, on the other hand, may give an added stimulus. Hyperthyroidism apparently does not affect growth.

The adrenal cortex if underactive apparently does not alter growth, but certain overactivities will retard growth. The development of the Cushing and the adrenogenital syndrome will delay or stop a person's increase in height.

Certain types of hyperplasia, on the other hand, may not alter the growth rate. In one such case of proven hyperplasia of the adrenal cortex (in a 16-year-old girl with hirsutism) with purple striae of five years' duration and without alteration in the carbohydrate metabolism or hypertension, growth continued normally. According to Talbot and Sobel,[10] hyperadrenocorticism with virilism is likely to show an increase in growth rate, especially the rate of maturation. Two such patients that I observed had an increase in growth rate; however, the epiphyses closed very early, and both patients were dwarfed because the duration of growth was greatly shortened. Since the adrenal cortex may be underactive in pituitary dwarfism and underactivity of the gland is not important in growth, adrenal cortical therapy is not necessary to stimulate growth.

Androgens and estrogens appear to play important roles in growth, as evidenced by the pubertal growth spurt. Androgens, however, are apparently not necessary for growth because men with primary hypogonadism may grow to a normal height. It may be postulated that they grow longer, since this is a possibility, but such patients as I have observed did not have a history that indicated a longer growth period. Androgens undoubtedly augment growth in the pituitary dwarf, and such an effect is noted in Cases 2 and 3 in the Table. In the patients in Cases 6 and 9, sexual development occurred early in the course of treatment and may have been an important role in their growth. The action of estrogens, on the other hand, is believed to close the epiphyses, and their use has been considered inadvisable when maximum skeletal growth is desired. It was believed that use of estrogens hastened the epiphyseal closure in Case 4, but in Case 8 (in which sexual development occurred) the patient continued to grow after menstruation began. It is possible, therefore, that estrogens have been administered in excessive doses or in a pattern different from that of normal estrogen secretion.

The importance of the growth hormone in the growth of a person has been generally accepted because of the work of Evans and his co-workers, but Escamilla and Bennett [11] report having given large doses of pure growth hormone to a pituitary dwarf without accelerating growth. This raises some doubt about the hormone's efficacy in the treatment of pituitary dwarfism. Their report also raises other questions: Do children grow continuously or spasmodically? Does the sensitivity of the skeletal system to growth stimulus change from sensitiveness to insensitiveness in the normal child, or does the stimulus to growth fluctuate? The voluminous literature on growth of children shows that children grow sporadically, but whether or not the sensitivity of the skeletal system changes or the stimulus fluctuates is not known. The data in my cases indicate that the sensitivity is altered. In Case 5 the patient grew for 32 months (the monthly rate was not recorded) and then ceased to grow for two months. When testosterone therapy was added, growth was resumed for five, one and one-half, eight, and one month periods, stopped for four months, and then again resumed during the next three months. It is obvious that growth was not continuing at a uniform rate even during the five, one and one-half, eight, and one month periods mentioned above. During this time the patient received the same amount of testosterone, and presumably the stimulus to growth was fairly constant. Antihormones may have developed, but if they did their amount either disappeared or diminished because growth was resumed after four months. These observations raise the question of whether or not Escamilla and Bennett's patient might not have been in a refractory stage when the pure growth hormone was used. It is also possible that the doses given were too large and that the sensitivity of the skeletal system to growth was suppressed. When the pure growth hormone becomes more generally available, it will be possible to ascertain the amount required, whether or not deleterious effect may be produced with overdosage, and whether or not other factors are necessary for growth production. In most pituitary dwarfs complete suppression of the pituitary hormones does not occur. The degree of suppression apparently varies, and the amount of secretion of the growth factor also undoubtedly varies in the different patients. The patients in Cases 6 and 9 grew and developed on extremely small doses of the extract; whereas, the patients in Cases 3, 5, and 10 required a great deal more. Does the administration of growth hormone suppress the action of the pituitary? The reaction in Case 1 brings this question to mind.

Treatment of pituitary dwarfism at the moment appears to consist in the use of crude anterior pituitary extracts available (in amounts depending upon each individual case), 1 to 2 grains daily of desiccated thyroid gland (which may not be necessary in every case), and testosterone when indicated. The doses of testosterone will vary from case to case. In a male of sufficient age for masculination to be desirable, larger doses should be employed, and in younger males and in females a smaller dose would be preferable, one which is just below the amount required to produce masculination. The use of estrogen is not looked on with favor unless closure of the epiphyses is desired. Very little attention has been paid to attempts to close the epiphyses in these cases because the idea has prevailed that as long as they remained open there was a chance for further growth. It is important to attempt to close the epiphyses in certain of the older patients because osteochondritis develops if they remain open too long. Osteochondritis that was beginning to be a physical handicap developed in the patients in Cases 6 and 9. One patient was 25 and the other 26. In Case 6 the hands and wrists were the most bothersome; whereas, in Case 9 the changes in the hips suggested Legg-Calvé-Perthes disease. In both cases the osteochondritis subsided as they grew and as the epiphyses closed.

SUMMARY AND CONCLUSIONS

The literature regarding the treatment of pituitary dwarfism is conflicting and confusing. Ten cases are briefly reported, stating the type of treatment employed and the results obtained. The factors which influence the rate and duration of growth in man and the influence of

10. Talbot, N. D., and Sobel, E. H.: Certain Factors Which Influence the Rate of Growth and the Duration of Growth of Children: Recent Progress in Hormone Research, Academic Press 1: 355, 1946.

11. Escamilla, R. F., and Bennett, L.: Pituitary Infantilism Treated with Purified Growth Hormone, Thyroid and Methyltestosterone, J. Clin. Endocrinol. 11: 221-228 (Feb.) 1951.

V 14
1951

the various endocrine glands are discussed. Data are presented supporting the idea that pituitary dwarfs under adequate treatment grow sporadically, as do normal children, and that the periods of decline or cessation of growth are due to a decrease in the sensitivity of the skeletal system to the growth stimulus. The question of whether the administration of growth hormone suppresses its production by the pituitary gland was raised. There is no answer to this at the moment. The treatment of pituitary drawfism at the moment is summarized, and the importance of closing the epiphyses in certain older patients because of the development of osteochondritis is emphasized.

Baylor University College of Medicine.

EFFECT OF CORTISONE ON SENSITIZED RH-NEGATIVE PREGNANT WOMEN AND AN ERYTHROBLASTOTIC INFANT

Alexander A. Doerner, M.D., Charles F. Naegele, M.D., Frederic D. Regan, M.D., Joseph F. Shanaphy, M.D.
and
Waldo B. Edwards, M.D., Staten Island, N. Y.

The discovery by Landsteiner and Wiener [1] in 1940 of the existence in man of a new blood factor, designated as Rh, and the later work of Levine and others,[2] who stressed the importance of this antigenic substance in the development of erythroblastosis fetalis, have initiated attempts by many investigators to discover methods of treating or preventing this hemolytic syndrome of the newborn. To date there have been no means described by which maternal immunization may be abolished or the degree of immunization lessened after the immune state has once been established. Although the treatment of the erythroblastotic infant has improved considerably, it still leaves much to be desired.

Recent reports in the literature [3] and personal experience have indicated that adrenal steroids seem capable of intervening in the manifestations of hypersensitivity of body cells to bacterial and nonbacterial substances. We were interested to note the striking hematologic improvement described in two cases of acquired idiopathic hemolytic jaundice [4] after treatment with corticotropin (ACTH). The Coombs test showed a progressive fall in titer, and the phenomenon of hemolysis and agglutination of red cells gradually disappeared. It seemed to us that a comparable series of events might occur with the use of cortisone in an immunized Rh-negative pregnant woman. It was reasoned that cortisone might prevent the development of anti-Rh agglutinins and conglutinins in the mother and possibly, by placental transfer, prevent or block the reaction of anti-Rh agglutinins and conglutinins with the Rh-positive blood cells of the fetus.

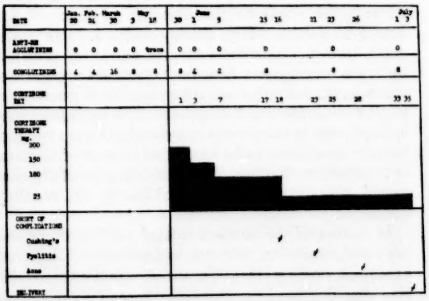


Chart 1 (case 1).—Clinical course of patient M. W.

The purpose of this paper is to present clinical and laboratory observations in the cases of two previously immunized Rh-negative pregnant women treated with cortisone and to describe the use of cortisone in the treatment of an erythroblastotic infant delivered by one of these patients.

REPORT OF CASES

CASE 1.—M. W., a 32-year-old white pregnant woman, quadrigravida and tripara, was seen by the obstetrical department of the United States Public Health Service Hospital, Staten Island, N. Y., in January, 1950. Her first two pregnancies terminated in the uneventful delivery of normal healthy children in May, 1943, and October, 1944. Her third child was reported by another hospital to have had severe anemia at birth, in July, 1946, secondary to a mild erythroblastosis fetalis. The first day of her last menstrual period was Oct. 15, 1949; the expected date of her delivery was calculated to be July 22, 1950.

Physical examination and routine laboratory studies, including complete blood count, determination of sedimentation rate, urinalysis, serologic tests, and chest roentgenography, disclosed no abnormalities. The patient's blood was reported to be type B, Rh-negative, while that of her husband was Rh-positive. On Jan. 20, 1950, it was noted that her anti-Rh agglutinins were negative, while her conglutination titer was 4 units. Serial titers of anti-Rh agglutinins and conglutinins are recorded in Chart 1. On May 30, cortisone administration was begun, the patient receiving 700 mg. during the first four days and thereafter 100 mg. daily. Pertinent features of the patient's clinical course are illustrated also in Chart 1.

Cortisone was obtained through a special grant from the Division of Hospitals, United States Public Health Service.

Dr. Edward H. Reisner Jr., consultant in hematology at the United States Public Health Service Hospital, reviewed the paper and gave advice in its preparation.

From the Department of Medicine, United States Public Health Service Hospital, Staten Island N. Y.: Chief of Medicine (Dr. Doerner); Deputy Chief of Medicine (Dr. Naegele); Deputy Chief of Medicine (Dr. Regan), and the Department of Obstetrics and Gynecology, United States Public Health Service Hospital, Staten Island, N. Y.: Acting Deputy Chief (Dr. Shanaphy); Chief of Service (Dr. Edwards).

1. Landsteiner, K., and Wiener, A. S.: Agglutinable Factor in Human Blood Recognized by Immune Sera for Rhesus Blood, Proc. Soc. Exper. Biol. & Med. **43**: 223, 1940.

2. Levine, P.; Wigod, M.; Backer, A. M., and Ponder, R.: Kell-Cellano (K-k) Genetic System of Human Blood Factors, Blood **4**: 869, 1949.

3. (*a*) Stoerk, H. C.: Inhibition of Tuberculin Reaction by Cortisone in Vaccinated Guinea Pigs, Federation Proc. **9**:345, 1950. (*b*) Berthrong, M.; Rich, A. R., and Griffith, P. C.: Study of Effect of Adrenocorticotropic Hormone (ACTH) upon Experimental Cardiovascular Lesions Produced by Anaphylactic Hypersensitivity, Bull. Johns Hopkins Hosp. **86**:131, 1950. (*c*) Thorn, G. W., and others: Medical Progress: The Clinical Usefulness of ACTH and Cortisone, New England J. Med. **242**:824, 1950.

4. Gardner, F. H.: Blood Club Third Annual Meeting; ACTH in Leukemia, Blood **5**: 791, 1950.

On the 18th day of therapy, evidence of early Cushing's syndrome was observed. Thereafter the patient was maintained on only 25 mg. of cortisone daily. An Aerobacter aerogenes urinary tract infection developed on the 23d day of cortisone administration, responding readily, however, to chloramphenicol therapy. Acne was first noted on the 28th day of cortisone therapy, persisting during the entire period of observation.

Except for these minor complications, the patient's antepartum course was otherwise unremarkable. On July 3, spontaneous labor began resulting in the delivery of a 6 lb. (2,720 gm.) boy one and one-half hours later.

Hematologic Data for Baby of Patient M. W.

Date	Red Blood Cells, Millions	Hemoglobin, Gm.	Erythroblasts, %	Normoblasts, %
7/3, 4 p. m.	3.8	10.5	4	37
10 p. m.	4.2	15.5	..	17
7/4.	4.3	15.0	..	5
7/5.	5.5	15.5	1	0
7/6.	5.5	15.5	0	0

At birth the baby's cord was noted to be grossly icteric. An immediate capillary blood count revealed 3,820,000 red cells, with 37% normoblasts and 4% erythroblasts. The blood was Rh-positive. The pediatric consultant concurred in the diagnosis of erythroblastosis fetalis and expressed a guarded prognosis. Fifteen minutes after delivery, the baby was given 25 mg. of cortisone as well as a transfusion of 60 cc. of compatible Rh-negative blood. The following day 15 mg. of cortisone was administered to the infant. No other therapy was given. On the third day of life, the baby's red cell count was within normal limits, and it remained so thereafter. Details of his hematologic data are recorded in Table 1.

CASE 2.—C. V., a 31-year-old white pregnant woman, quadrigravida and tripara, was seen by the obstetrical department of the United States Public Health Service Hospital, Staten Island, N. Y., in March, 1950. Her first pregnancy resulted in the delivery of a normal infant in October, 1943. A macerated 6 lb. infant was delivered in June, 1945, and in August, 1948, pregnancy terminated in a stillbirth. The first day of the patient's last menstrual period was Jan. 2, 1950; the expected date of her delivery was October 9.

The results of physical examinations and routine laboratory studies were all within normal limits. Her blood was type A, Rh-negative. On March 16, anti-Rh agglutinins were reported present

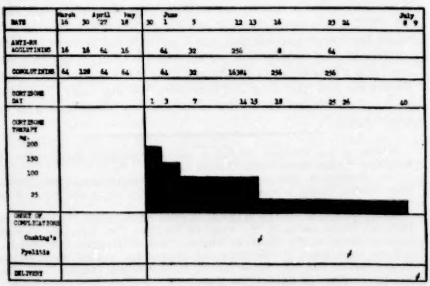


Chart 2 (case 2).—Clinical course of patient C. V.

in a titer of 16 units and conglutinins in a titer of 64 units. Serial titers of these substances are recorded in Chart 2. The markedly increased conglutinin titer on June 12 was believed to be associated with an upper respiratory tract infection. On May 30, cortisone administration was begun. The dosage employed and the complications noted during therapy are presented in Chart 2. Except for the development of a very early Cushing syndrome, and a Bacillus proteus urinary tract infection, the patient's antepartum course remained uneventful during cortisone administration. On July 9, spontaneous labor began, and a 6 lb. infant with the characteristic appearance of a hydrops fetalis was delivered two hours later.

COMMENT

In our opinion, Gardner's success in treating acquired idiopathic hemolytic anemia with corticotropin was based on the probable ability of adrenal oxysteroids to block or prevent in some way the union of agglutinin and red cell. It was further hypothesized that the basic mechanism of the interaction of anti-Rh agglutinin and conglutinin with red cell might be prevented in a similar manner. The use of cortisone was felt justifiable in an effort to influence the clinical course of two Rh-negative pregnant women, previously immunized to the Rh factor. The case reports presented show that their immunized state was not abolished or the degree of immunization lessened in these patients by the administration of cortisone.

That in both of these patients urinary tract infections developed during the course of their therapy is of interest. Our previous experience has been that in other patients bacterial infections have developed either during or shortly after cortisone therapy, affording us the impression that, in some patients at least, there is a possible disturbance of immune body mechanisms as a result of cortisone.

Cortisone therapy did not prevent the development of the hemolytic syndrome in the infants delivered by these patients. Although the natural course and possible spontaneous remission of erythroblastosis must be considered, attention should be called to the fact that in the infant treated with cortisone the objective evidence of this hemolytic process was so quickly reversed. In an earlier paper [5] we emphasized the concept previously proposed by other investigators that the oxysteroids are not disease-specific but rather are group-specific in their ability to alter abnormal tissue responses. This hypothesis may be applicable to the prompt reversibility of the abnormal hematological state in the infant and the lack of response in the mothers. Further observations and carefully controlled utilization of this mode of therapy are certainly warranted.

In neither of the mothers treated with cortisone did any undesirable or serious complications, such as eclampsia, develop. This observation would seem to indicate that if a need for cortisone therapy arose during pregnancy its use would not be prohibited.

SUMMARY

Two cases of previously immunized Rh-negative pregnant women treated with cortisone are described; the results of cortisone therapy in the erythroblastotic infant of one of these patients are noted, and the rationale of cortisone therapy in an attempt to influence the hemolytic syndrome of the newborn is briefly discussed.

ADDENDUM

Since submitting the above report, one additional erythroblastotic infant was treated with cortisone. At the time of delivery, the mother's anti-Rh agglutinins were

5. Doerner, A. A.; Naegele, C. F., and Regan, F. D.: Hemolytic Streptococcic Sore Throat: Cortisone in the Treatment of the Poststreptococcic State, J. A. M. A. **146**: 641 (June 16) 1951.

V 14
1951

positive and her conglutination titer was 256 units. An immediate capillary blood studies done on the infant revealed 2,400,000 red cells, 34% normoblasts, 9.5 gm. of hemoglobin, and a strongly positive direct Coombs test. Initial therapy was limited to cortisone, 50 mg. being given intramuscularly 15 minutes after delivery. Within the next 24 hours, another 45 mg. of cortisone was administered in divided doses. Despite a decrease in normoblasts and a decline in the Coombs reaction, the poor clinical response of the infant led to the administration of 30 mg. of corticotropin in divided doses over the next 18 hours. Exchange transfusion was unsuccessful, and the infant died on the third neonatal day.

Although definite conclusions cannot be drawn from our treatment of two erythroblastotic infants, it would appear that, if irreversible tissue changes have occurred, cortisone therapy would be ineffective. This may account for the difference in response of the two infants treated, inasmuch as in both cases favorable hematologic and serologic effects were noted.

United States Marine Hospital, 732 Bay St.

EFFECT OF CORTICOTROPIN (ACTH) ON CHILDREN WITH THE NEPHROTIC SYNDROME

Milton Rapoport, M.D., Wallace W. McCrory, M.D., Guilio Barbero, M.D., Philadelphia
Henry L. Barnett, M.D., Carolyn W. Forman, M.D.
and
Helen McNamara, M.A., New York

In this communication we are presenting clinical observations of the effect of corticotropin (ACTH) and cortisone on children with the nephrotic syndrome. Our interest in examining the effect of these agents in this disorder was directed primarily toward an increased understanding of the syndrome itself and only secondarily toward evaluation of the hormones. To make the experience as broad as possible, the observations of the groups working at Children's Hospital of Philadelphia and the Children's Clinic of the New York Hospital-Cornell Medical Center have been pooled.

Acknowledging the different points of view centering about the clinical concepts of lipoid nephrosis and the nephrotic syndrome,[1] we wish to clarify what we mean in this paper by the term nephrotic syndrome. We consider all children showing insidious onset of edema associated with proteinuria, low serum total protein and albumin, and high cholesterol level as having the nephrotic syndrome, whether or not findings of glomerulonephritis are present early or develop during the course of the disorder.

Edema is the sign which overshadows the other derangements present in children with the nephrotic syndrome. It is the abnormality which usually has brought the child to the physician and has led to the recognition of his disturbance. Though parental and medical concern for children with the nephrotic syndrome too often fluctuates with the presence or absence of edema, it must be remembered that loss of edema is not synonymous with cessation of the underlying disorder. The physiological and biochemical disturbances which characterize the nephrotic syndrome may occur in varying degrees of intensity. Accordingly, the child with the nephrotic syndrome may belong anywhere in the clinical spectrum ranging from the normal-appearing child with minimal proteinuria and little or no hypoproteinemia or hyperlipemia to the grotesquely edematous child with marked biochemical and physiological abnormalities.

It has been established that corticotropin is capable of producing loss of edema by diuresis in children in the edematous stage of the nephrotic syndrome.[2] For convenience of reference, we have divided the clinical spectrum into three parameters to define the course of the child with the nephrotic syndrome following the occurrence of a diuresis leading to loss of edema:

1. Incomplete loss of edema or rapid reaccumulation of edema with associated hypoproteinemia, hyperlipemia and proteinuria. This may be termed persistence of the nephrotic state.

2. Sustained freedom from edema with changes in values for serum proteins and lipids in the direction toward normal, but with persistence of proteinuria. Though this is abatement rather than disappearance of the disorder, it may for convenience be designated as remission.

Dr. John R. Mote of the Armour Laboratories allocated the corticotropin used in the early part of this study.

The cortisone used in the study was purchased with grant No. H-699, from the United States Public Health Service.

Supported in part by research grants from the Divisions of Research Grants and Fellowships of the National Institutes of Health, United States Public Health Service.

Read in part before the Society for Pediatric Research at French Lick, Ind., May 9, 1950, and before the American Pediatric Society at Atlantic City, N. J., May 5, 1951.

From The Children's Hospital of Philadelphia (Department of Pediatrics) School of Medicine, University of Pennsylvania (Drs. Rapoport, McCrory, and Barbero, and the New York Hospital and the Department of Pediatrics, Cornell University Medical College (Drs. Barnett and Forman, and Miss McNamara).

1. (*a*) Barness, L. A.; Moll, G. H., and Janeway, C. A.: The Nephrotic Syndrome: I. Natural History of the Disease, Pediatrics **5**: 486 (March) 1950. (*b*) Heymann, W., and Startzman, V.: Lipemic Nephrosis, J. Pediat. **28**: 117 (Feb.) 1946. (*c*) Block, W. M.; Jackson, R. L.; Stearns, G., and Butsch, M. P.: Lipoid Nephrosis: Clinical and Biochemical Studies of 40 Children, with 10 Necropsies, Pediatrics **1**: 733 (June) 1948. (*d*) Bradley, S. E., and Tyson, C. J.: Medical Progress: Nephrotic Syndrome, New England J. Med. **238**: 223 (Feb. 12); 260 (Feb. 19) 1948. (*e*) Farr, L. E.: Nephrosis, Advances, Int. Med. **1**: 225, 1942. (*f*) Rennie, J. B.: Oedematous Syndrome of Nephritis with Special Reference to Prognosis, Quart. J. Med. **16**: 21 (Jan.) 1947.

2. (*a*) Farnsworth, E. B.: Studies on Influence of Adrenocorticotrophin in Acute Nephritis, in Simple Nephrosis and in Nephrosis with Azotemia, in Mote, J. R.: Proceedings of the First Clinical ACTH Conference, Philadelphia, The Blakiston Company, 1950, p. 297. (*b*) Rapoport, M., in discussion on Farnsworth, E. B., ibid., p. 316. (*c*) Barnett, H. L.; Forman, C. W.; McNamara, H.; McCrory, W. W.; Rapoport, M.; Michie, A. J., and Barbero, G.: The Effect of ACTH on Children with the Nephrotic Syndrome: II. Physiologic Observations on Discrete Kidney Functions and Plasma Volume, J. Clin. Invest. **30**: 227 (Feb.) 1951. (*d*) Riley, C. M.; Nephrotic Syndrome: Effect of Adrenocorticotrophic Hormone, Pediatrics **7**: 457 (April) 1951. (*e*) Adlersberg, D.; Schaefer, L. E., and Dritch, R.: Effect of Cortisone, Adrenocorticotropic Hormone (ACTH) and Desoxycorticosterone Acetate (DOCA) on Serum Lipids, J. Clin. Invest. **29**: 795 (June) 1950.

3. Sustained freedom from edema with establishment and persistence of normal values for serum proteins and lipids and disappearance of proteinuria. This may be considered a cure.

The therapeutic effectiveness of any agent capable of inducing loss of edema by diuresis in children with the nephrotic syndrome may be more clearly assessed in the framework of these three categories.

CLINICAL MATERIAL AND PLAN OF STUDY

From August, 1949, to March, 1951, 34 children with the nephrotic syndrome were observed following the administration of one or more courses of corticotropin. All these children had the nephrotic syndrome, as we have defined it, for varying periods before treatment. They ranged in age from 1½ to 8 years; 14 were female; 2 were Negroes. Pertinent clinical data are presented in Table 1.

During periods of hospitalization, patients at the Children's Hospital of Philadelphia were maintained on normal diets without added salt. Children at the New York Hospital were fed low-salt (20 mEq. per day), but otherwise normal, diets. All were ambulatory and active if possible. Patients were weighed daily; liquids were permitted as desired. The following determinations were done before, during, and after corticotropin or cortisone therapy: sedimentation rate, eosinophil count, urinalysis with quantitative determination of daily urinary protein and formed element excretion (Addis counts), content of serum carbon dioxide, chlorine, sodium, potassium, nonprotein nitrogen (or blood urea nitrogen), total proteins, albumin, total lipids, and cholesterol.

Clinical results obtained in the 34 children are the subject of this report. Physiological observations on discrete kidney functions and plasma volume have been reported elsewhere.[2c]

TABLE 1.—*Results of Treatment*

Subject	Sex	Race	Age, Yr.	Duration of Disease, Mo.	Edema	Spontaneous Diuresis	Initial Evidence of Renal Disease: Mg., % BUN	NPN	Hematuria: Routine	Addis†	Hypertension‡	Date 1st Course Corticotropin	Corticotropin‡ Diuresis	Status—3/1/51: Remission Duration	Reaccumulated Edema	Death
Children's Hospital of Philadelphia																
C. M.	F	W	8.0	48	Massive	+	..	47	....	1	++	8/ 5/49	1+	18 mo.	0	.....
S. S.	F	W	3.0	9	Massive	None	..	65	....	0	—	8/24/49	2+	16 mo.*	0	.....
C. G.	F	W	2.0	1	Mod.	0 (+*)	..	22	....	0	—	8/25/49	1—	Spont.	Minimal	.....
S. S.	M	W	3.4	12	Mod.	None	..	14	....	1	—	3/27/50	3+	15 mo.	Mod.	.....
P. A.	M	W	2.0	2	Massive	None	..	46	....	1	—	5/ 5/50	2+/2—	§	Massive	.....
C. F.	M	N	2.0	4	Massive	None	..	40	....	0	—	6/ 2/50	2+	7 mo.	0	.....
B. W.	M	W	6.0	48	Massive	+	..	51	....	0	—	6/14/50	1+	9 mo.	0	.....
					2 yr. remission											
D. L.	F	W	1.5	1	Massive	None	..	26	....	0	—	6/21/50	1+/2—	0	Massive	.....
H. R.	M	W	3.0	3	Mod.	+	..	27	....	0	—	6/21/50	1+	7½ mo.	0	.....
L. S.	F	W	8.0	4	Massive	+	..	70	....	2	—	8/ 4/50	2+/1—	0	Massive	.....
S. C.	M	W	4.0	4	Mod.	+	..	27	....	0	—	8/12/50	2+	0	Mod.	.....
R. M.	M	W	3.0	1	Massive	0 (+*)	..	24	....	0	—	8/15/50	2—	1 wk.	0	.....
J. C.	M	W	3.1	6	Massive	None	..	80	....	3	—	9/ 7/50	2—	0	No effect	.....
L. M.	F	W	5.0	2	Massive	0 (+*)	..	15	....	1	—	9/27/50	2+/1—	0	Massive	.....
J. F.	F	W	4.0	1	Mod.	None	..	84	....	2	—	11/ 8/50	2—	0	No effect	.....
A. B.	F	W	3.0	2	Mod.	None	..	16	....	1	—	8/23/49	1+/1—	0	Mod.	6/—/50
K. Z.	M	W	3.5	16	Massive	None	..	53	....	3	—	12/17/49	2—	0	No effect	1/—/51
M. L.	M	W	2.5	1	Mod.	None	..	25	....	0	—	3/ 4/50	2+	0	Massive	3/—/51
R. T.	M	W	3.0	4	Massive	None	..	37	....	0	—	3/29/50	1+/1—	0	Massive	1/—/51
C. V.	M	N	1.5	¼	Mod.	None	..	42	....	0	—	7/28/50	2+	0	Massive	10/—/50
New York Hospital																
RBC/HPF (Centrifuged) ¶																
I. C.	F	W	3.5	7	Massive	None	42	..	++	..	—	1/ 3/50	3+/1—	9 mo.	0	.....
K. N.	M	W	3.0	10	Massive	None	36	..	++	..	—	1/17/50	3+	9 mo.	0	.....
M. D.	M	W	8.0	7	Mod.	None	15	..	++	..	+	3/11/50	2—	0	No effect	.....
B. B.	F	W	3.5	7	Mod.	None	31	..	0	..	—	3/16/50	5+	0	Mod.	.....
J. S.	M	W	3.2	2.5	Minimal	+	8	..	0	..	—	4/14/50	1+	3 mo.	Minimal	.....
R. K.	F	W	3.9	11	Massive	+ (+*)	13	..	0	..	—	7/11/50	1+	0	Massive	.....
M. N.	M	W	3.5	5	Mod.	+	14	..	0	..	—	8/18/50	1+	5½ mo.	0	.....
P. S.	M	W	2.0	3	Massive	+	26	..	++	..	+	9/12/50	2+	0	Mod.	.....
P. M.	M	W	2.8	1	Mod.	+	21	..	++	..	—	11/ 1/50	1+	4 mo.	0	.....
E. B.	F	W	4.0	5	Mod.	None	19	..	++	..	—	12/15/50	2+	0	Mod.	.....
M. B.	F	W	1.5	1	Mod.	None	26	..	0	..	—	1/ 8/51	1+	1 mo.	0	.....
W. H.	F	W	2.5	10	Massive	None	41	..	+	..	—	2/ 9/51	1+	1 wk.	0	.....
H. G.	F	W	2.5	5	Mod.	+	19	..	0	..	—	2/15/51	2+	2 days	0	.....
J. H.	M	W	4.0	17	Massive	+	22	..	++	..	+	8/ 1/50	3—	0	No effect	12/—/50

* After corticotropin therapy.
† No albuminuria for 6 mo.
‡ + = diuresis; — = no diuresis.
§ Grade 0 = less than 1 million red blood cells per 12 hr., Grade 1 = 1-10 million per 12 hr., Grade 2 = 11-50 million per 12 hr., and Grade 3 = 51 or more million red blood cells per 12 hr.
‖ Diastolic pressure reading — = less than 80, + = 80 to 90, ++ = 90 to 105.
¶ Grade 0 = 0 to occasional red blood cells, + = 1 to 10, ++ = 11 to 50.

RESULTS

Effect of Corticotropin Administration on Edema of Patients with Nephrotic Syndrome.—In Table 2, with loss of edema by diuresis as the criterion, the results following one or more courses of corticotropin administration are presented.

It is apparent that corticotropin is capable of inducing a profuse diuresis in a highly significant number of children in the edematous stage of the nephrotic syndrome. Twenty-eight (82%) lost their edema with the first course of this drug. It is also seen that diuresis can be produced repeatedly in some patients. The one patient

V 147
1951

treated five times responded with diuresis each time. In general, however, the number of favorable responses in each group decreased when patients were subjected to repeated courses. Thus, of 14 children given two courses of corticotropin, 11 had profuse diuresis on the first course, and 8 of these 11 responded with diuresis to the second course. Of 7 patients observed during three courses of corticotropin, diuresis occurred in 5 with the first course; 3 of these 5 responded similarly to the second and third treatments. The responses of the 2 children subjected to four courses of corticotropin demonstrate that failure to respond to a given course does not preclude a future response (Table 2). Of the 6 children who had no diuresis with the first course of corticotropin 3 did not respond to the second administration and 2 were unaffected by a third course. The occurrence of a diuresis is thus unpredictable in the individual patient.

TABLE 2.—*Effect of Corticotropin on Edema of 34 Children with Nephrotic Syndrome**

No. of Patients	1		2		3		4		5	
	+	−	+	−	+	−	+	−	+	−
10	9	1	..	..	..	..	..	..	..	..
14	11	3	8	6	..	..	..	..	..	..
7	5	2	3	4	3	3	..	..	..	..
2	2	0	..	2	1	2	2	0	..	..
1	1	0	1	0	1	0	1	0	1	0
Total 34	28	6	12	12	5	5	3	0	1	0

* + = diuresis, − = no diuresis. Patients are grouped according to the number of courses administered.

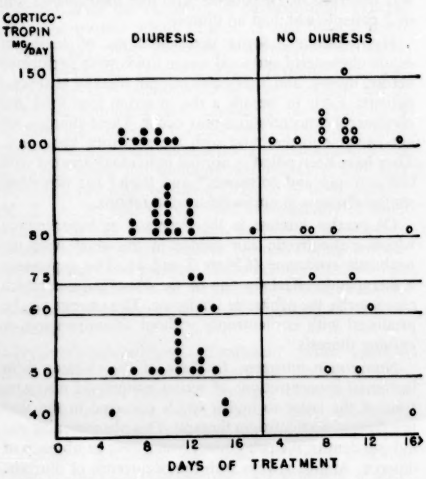


Chart 1.—Relationships of daily dosage and duration of administration of corticotropin to loss of edema.

Relationships of Daily Dose of Corticotropin and Duration of Treatment to Induction of Diuresis.—The range of dosage of corticotropin employed in the 34 children is depicted in Chart 1.

The dosage ranged from 40 mg. to 150 mg. daily. Inspection of the figure makes it obvious that a daily dose of 50 mg. was as effective in eliciting diuresis as any greater dose. In those children who had no diuresis from corticotropin, there was no correlation between the failure and the amount of the drug administered. Although diuresis occurred when the daily dose of corticotropin was given in two or three divided doses at 12-hour and 8-hour intervals, the majority of patients received the drug at 6-hour intervals. While diuresis occurred in two patients after only 5 days of treatment and in one patient after 17 days, most of the children were treated for 8 to 12 days.

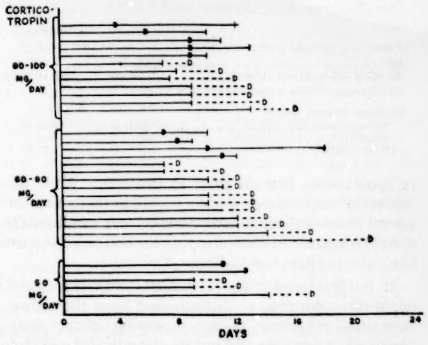


Chart 2.—Time of onset of corticotropin-induced diuresis. Diuresis occurring during therapy is represented by a solid D; that occurring afterward, by an open D. The vertical bar crossing each line represents the time of cessation of therapy.

Chart 2 permits an analysis of the relationship of the onset of diuresis with the daily dose, the duration of administration, and the cessation of corticotropin therapy. In this chart the time of onset of diuresis in relation to the number of days of administration is plotted for different dosage levels of corticotropin. The time of onset of diuresis was designated as that day on which the daily weight loss exceeded any antecedent daily variation (approximately 3 lb., or 1.3 kg., of body weight), and which was followed by continued loss of weight. There is obvious lack of correlation between the onset of diuresis and the variables of corticotropin administration (daily dose, duration, and cessation of therapy). It is apparent that a diuresis resulting in complete loss of edema can take place while a child is receiving this hormone, or can begin as late as four days after cessation of therapy. If any conclusion can be drawn, it would be that the onset of diuresis is not dependent on temporary adrenal insufficiency that follows termination of a period of corticotropin administration.

Relationship of Pretreatment Clinical Status of Patients with Response to Corticotropin Administration.—In Table 3, various clinical data are presented in an attempt to determine whether there were any significant differences between the children who failed to attain diuresis with corticotropin therapy and the children in whom diuresis occurred.

It can be inferred that neither the age of a child with the nephrotic syndrome nor the duration of his disorder

seems to determine whether he will respond to corticotropin therapy with a diuresis. Of the 28 children in whom this hormone induced a diuresis, one or more spontaneous diureses in the pretreatment period of the disease had occurred in 10, while none of the 6 children who failed to acquire diuresis with corticotropin had a history

TABLE 3.—*Clinical Data and Response of Patient to Corticotropin*

	Diuresis	No Diuresis
Number of patients	28	6
Age	1½-8 yr.	3-8 yr.
Duration prior to corticotropin	1 wk.-4 yr.	1 mo.-17 mo.
Spontaneous diuresis before corticotropin	10 of 28	0
Evidence of renal disease		
Nitrogen retention	15 of 28	3 of 6
Hematuria	12 of 28	5 of 6
Hypertension	2 of 28	2 of 6

of spontaneous diuresis prior to treatment. While this difference might tempt one to postulate that some unknown innate individual refractoriness may condition the diuretic response to corticotropin, this difference is more likely due to chance and without significance.

It is of interest that the patients with the "pure" nephrotic syndrome, as distinguished from those demonstrating evidences of accompanying glomerulonephritis when first seen, did not significantly differ in their ability to obtain diuresis with this therapy. Thus, of 28 children who acquired diuresis, 15 had findings usually attributed to nephritis—i. e., hematuria, azotemia and/or hypertension.

Influence of Corticotropin on Components of the Nephrotic Syndrome.—Up to this point in the analysis of our results, we have used loss of edema as the sole criterion of therapeutic action of corticotropin in children with the nephrotic syndrome. It is important to examine the several recognized derangements encountered in these children to determine whether administration of this hormone has effects not dependent on diuresis.

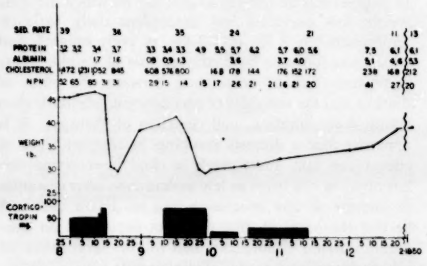


Chart 3.—Changes in concentration of serum proteins, cholesterol, and nonprotein nitrogen, and the loss of weight with diuresis induced by corticotropin treatment of patient S. S., a 3-year-old nephrotic girl.

Hypoproteinemia: Fluctuations of total serum protein concentration in the child with the nephrotic syndrome reflect chiefly changes in serum albumin concentration. While small increases in serum protein concentration may occur during corticotropin therapy, the most striking increases take place after diuresis (Charts 3 and 4). No significant increases in serum protein concentration were observed in children who failed to obtain diuresis with corticotropin therapy.

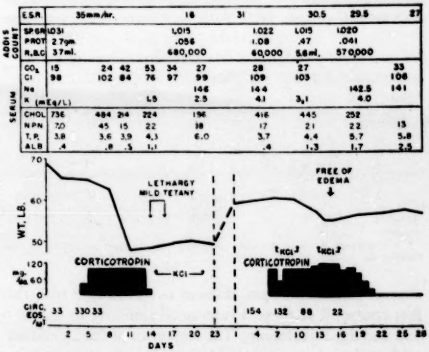


Chart 4.—Clinical and biochemical data on L. S., a 7-year-old girl, during two courses of corticotropin therapy resulting in diuresis.

Proteinuria: Daily urinary protein excretion was measured in 12 patients during this therapy. Urinary protein excretions decreased with regularity early in the course of therapy (Chart 4). This effect of the hormone was observed in 10 patients who lost their edema and in 2 patients who had no diuresis.

Hyperlipemia: Serial determinations of levels of serum cholesterol and total serum lipids were performed before, during, and after corticotropin therapy in several patients. Early in therapy a rise in serum total lipid and cholesterol concentrations may occur. These changes are not peculiar to the child with the nephrotic syndrome. They have been noted in normal individuals treated with corticotropin and cortisone,[2e] and Rich [3] has described similar changes in cortisone-treated rabbits.

Of greater interest is the decrease in hyperlipemia which corticotropin can induce in the child with the nephrotic syndrome (Charts 3 and 4). This represents a therapeutic effect on one of the abnormalities which characterize the nephrotic syndrome. This change can be produced with corticotropin without accompanying or ensuing diuresis.

Nonprotein nitrogen: In some of the children with increased concentrations of serum nonprotein nitrogen, rises of the latter to higher levels occurred in the first few days of corticotropin therapy. This phenomenon was independent of the subsequent occurrence or absence of diuresis. Almost always with the occurrence of diuresis, elevated serum nonprotein nitrogen concentrations fell to normal levels (Charts 3 and 4).

Evidences of Increased Adrenal Gland Secretion Induced by Corticotropin.—The edematous child treated with corticotropin shows humoral and metabolic changes not peculiar to him but similar to those produced in the normal child and indicative solely of stimulation of the adrenal gland by corticotropin.

3. Rich, A. R.; Cochran, T. H., and McGoon, D. C.: Marked Lipemia Resulting from the Administration of Cortisone, Bull. Johns Hopkins Hosp. 88: 101 (Jan.) 1951.

V 147
1951

Eosinopenia: The production of a significant fall in the number of circulating eosinophils (50% or greater) was used as an index of adrenal gland stimulation. Dosage in each instance was adjusted to the amount necessary to achieve this effect (Chart 4). Since eosinopenia was produced regularly in all children by corticotropin administration, this response could not be correlated with the effect of the hormone on the nephrotic syndrome. Eosinopenia seems to be too euphemistic an expression of adrenal gland stimulation to be useful as a quantitative index of the therapeutic adequacy of any adrenal gland effect on the nephrotic syndrome produced by corticotropin.

Weight Gain: Gain in weight due to sodium and water retention is a recognized accompaniment of corticotropin administration. This effect was noted in many children, and occasionally produced such massive anasarca as to constitute a therapeutic hazard.

Complications of Corticotropin Administration.—Metabolic Disturbances: The recognition of metabolic alkalosis with resultant tetany and associated hypokalemia in two patients early in the study led to the institution of the prophylactic use of potassium in the remainder of the patients. Potassium citrate, 1.5 gm. daily, was given during and after corticotropin therapy until diuresis ceased (Chart 4). Serum potassium concentrations were followed throughout therapy.

Infection: Spreading cellulitis, peritonitis and septicemia occurred as complications in 10 children. The frequency of occurrence of these grave complications, especially after the cessation of corticotropin therapy, led to the routine administration of prophylactic antibiotic therapy; either penicillin or aureomycin was used.

Cardiovascular Complications: Hypertension and tachycardia were encountered in seven patients, all of whom had depressed renal function at the beginning of the particular course of corticotropin therapy or showed moderate to marked azotemia during treatment with this hormone. These are ominous complications and may necessitate cessation of therapy. Three of these patients (K. Z., A. B., and C. V.) died subsequently of renal failure. One (C. F.) has been in remission for seven months, after the hypertensive episode during corticotropin therapy. An increase of glomerular filtration rate to supernormal levels, as measured by inulin clearance, occurred in this patient after the beginning of this remission.

Hyperadrenocorticism: Treatment with corticotropin longer than 14 days or repeated courses at short intervals usually produced changes characteristic of Cushing's syndrome. Moon-face, acne, seborrhea, cutaneous striae, and hirsutism have all been observed.

Transient glycosuria was noted in several children. These changes disappeared following cessation of therapy in all children.

Effect of Cortisone on the Edematous Stage of the Nephrotic Syndrome.—During the progress of this study, the effects of cortisone on the edematous stage of the nephrotic syndrome were observed in 5 of the 34 children. Four children received one course, and one child, two courses. The individual dosage schedules are shown in Table 4. Diuresis did not occur in any instance, even though the amounts of administered cortisone are in the range of dosage employed by Luetscher and Deming[4] with some degree of success. As is shown in Table 4, four of these five patients had a diuresis when subsequently treated with corticotropin. Because of this, a further trial of cortisone was not attempted. It would obviously be unwarranted to draw any inferences regarding the quantitative effectiveness or differences in mode of action of these two agents from these limited data.

TABLE 4.—*Comparative Effects of Cortisone and Corticotropin on the Edema of Five Patients with the Nephrotic Syndrome*

	Cortisone					Corticotropin				
Patients	Date	Days Treated	Total Dose, Mg.	Diuresis −	Diuresis +	Date	Days Treated	Total Dose, Mg.	Diuresis −	Diuresis +
R. T.	1/ 6/50	17	1,300	−	..	3/29/50	12	960	..	+
	3/ 1/50	8	637	−	..	.....	..	...	..	..
S. S.	3/ 2/50	7	400	−	..	3/27/50	11	880	..	+
P. A.	12/ 3/50	9	1,300	−	..	3/12/51	11	880	..	+
I. C.	12/16/50	6	335	−	..	1/ 4/50	14	1,000	..	+
M. D.	2/10/50	10	925	−	..	3/11/50	10	1,220	−	..

Influence of Corticotropin on the Prognosis of the Nephrotic Syndrome.—Prolonged observations of children with the nephrotic syndrome make it clear that, barring the occurrence of progressive renal failure, the prognosis of this disorder is unpredictable in any given child early in the course of his illness. Nevertheless, we have examined the present status (to March 1, 1951) of the 34 children treated with corticotropin to see whether we could discern any influence of this drug on the ultimate outcome in this disorder. The status of the 34 children is presented in Chart 5.

Six of the patients have died. Two deaths were due to infection (R. T., peritonitis; J. H., hepatitis). Death in four instances was due to progresisve renal disease and renal failure. One of these four children had shown no diuretic response to corticotropin; one had one corticotropin-induced remission and two had two such remissions. In spite of these remissions of the nephrotic syndrome, renal disease (glomerulonephritis) progressed uninterruptedly to death.

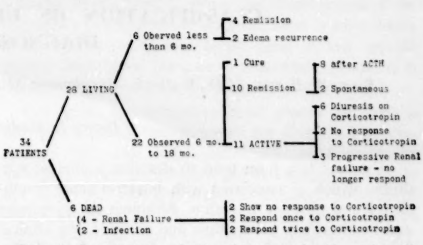


Chart 5.—Present status of 34 patients treated with corticotropin (March 1, 1951).

Of the 28 living children, 6 have been observed less than six months: Four are at present in remission, and two have reaccumulated edema following corticotropin-induced diuresis.

4. Luetscher, J. A., Jr., and Deming, K. B.: Treatment of Nephrosis with Cortisone, J. Clin. Invest. **29**: 1576 (Dec.) 1950.

The remaining 22 children followed for 6 to 18 months have shown the following: 1. One child is cured (S. S., Chart 3). 2. Ten children are in remission, eight of these after corticotropin therapy and two after spontaneous diureses following failure to obtain diuresis with this drug. 3. Eleven children have reaccumulated edema following one or more corticotropin-induced diureses; six of these have responded with diuresis to every course of therapy given, and five have failed to respond to subsequent courses of therapy, though diuresis did occur initially; three of these five children show evidences of associated active glomerulonephritis and progressive renal failure.

COMMENT

It is apparent that corticotropin is capable of inducing a remission in a significant number of patients in the edematous stage of the nephrotic syndrome, and can do so repeatedly in many instances. Because of the frequent reoccurrence of the edematous phase of the nephrotic syndrome after a corticotropin-induced remission and the apparently uninfluenced progression of associated glomerulonephritis, it seems doubtful whether treatment with this hormone under the regimens of administration employed in this study has permanently altered the course of the disorder in a significant number of these patients. By analogy to its action in such other diseases as rheumatoid arthritis and lupus erythematosus, corticotropin appears to alter those body responses manifested as the nephrotic syndrome, without directly affecting the causative agent which evokes these responses. Thus, corticotropin administered to patients in the edematous stage of the nephrotic syndrome cannot at this time be considered more than a therapeutic agent of symptomatic value in the management of this disease.

Nevertheless, corticotropin is a powerful and valuable tool in the hands of the clinical investigator studying the nephrotic syndrome. Continued investigation of the action of this potent substance will undoubtedly yield important information concerning the fundamental nature of the disorder.

SUMMARY AND CONCLUSIONS

1. Corticotropin (ACTH) was capable of inducing diuresis and temporary remission in a significant number of patients (28 of 34) in the edematous stage of the nephrotic syndrome; this can occur repeatedly in many instances.

2. The occurrence of corticotropin-induced diuresis was apparently unrelated to (1) age of the patient; (2) duration or severity of the nephrotic syndrome; (3) presence or absence of signs of accompanying glomerulonephritis (hematuria, azotemia and/or hypertension).

3. Diuresis induced by corticotropin administration is associated with striking improvement in the biochemical derangements that characterize the nephrotic syndrome (i. e., decrease or disappearance of hyperlipemia and proteinuria and an increase or restoration to normal of serum protein levels).

4. Complications of varying severity (metabolic alkalosis with hypokalemia and tetany, infection, hypertension, and tachycardia) can and do occur during corticotropin administration.

5. Clinical signs of hyperadrenocorticism were encountered in patients receiving corticotropin for periods of two or more weeks. Disappearance of these signs was complete following cessation of corticotropin administration. These untoward effects have curtailed prolonged administration of the drug in these subjects.

6. The degree and duration of improvement resulting from administration of corticotropin to children with the nephrotic syndrome were variable and unrelated to dosage or length of treatment.

7. It is doubtful whether the ultimate course of the nephrotic syndrome has been permanently altered in a significant number of these children by the regimen of corticotropin administration employed in this study.

8. Corticotropin is an invaluable adjuvant to apply to the investigation of this chronic and disabling disease.

1740 Bainbridge St. (Dr. Rapoport).

V 14
1951

CLASSIFICATION OF UREMIA AND DIFFERENTIAL DIAGNOSIS OF CASES

Roger W. Barnes, M.D., Walter E. Macpherson, M.D., R. Theodore Bergman, M.D., Gordon Hadley, M.D.
and
Henry L. Hadley, M.D., Los Angeles

"Uremia" is a term used to describe a clinical syndrome which is associated with bilateral renal insufficiency and nitrogen retention. Although the symptoms and findings may be multiple and variable, the clinical picture usually includes varying degrees of headache, vomiting, pericarditis, gastrointestinal symptoms, and, finally, coma and death in the late stages. The laboratory findings consist of an elevation in the nonprotein nitrogen, urea, creatinine, often potassium in the blood, and abnormal renal function tests. Acidosis, as shown by a low carbon dioxide plasma-combining power, develops in the later stages. The term "azotemia" is more commonly used to designate changes in laboratory findings without clinical symptoms. The classification given here and the most characteristic findings in the differential diagnosis are applicable to either azotemia or uremia.

In developing a classification of the causes of uremia it is necessary to recognize that (1) there are a few renal diseases which never result in azotemia or uremia and (2) there is a syndrome in which azotemia and uremia occur without renal disease. This is described as prerenal azotemia. Further, it is to be recognized that in any classi-

From the Departments of Urology, Internal Medicine, and Pathology, College of Medical Evangelists, School of Medicine.

Read before the Section on Urology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

fication of kidney disease or azotemia there are sure to be a few disease entities which do not seem to fit exactly into the outline. Also, there are some pathological lesions the exact nature or etiology of which is controversial. Because of these facts, there will always be differences of opinion regarding such a classification.

The causes of uremia naturally fall into two large divisions: (1) bilateral obstruction to urinary outflow and (2) nonobstructive bilateral renal disease. Both the etiology and the pathological physiology of these two groups are basically different. From the standpoint of treatment by specialists, the two groups also fall into different categories. The urologist treats the obstructive group for the reason that these conditions may often be relieved surgically, while the internist handles most of the nonobstructive cases for the reason that surgical treatment has little to offer. In most of the cases of uremia due to obstructive lesions, the situation is reversible when the obstruction is removed. It is not reversible in the majority of cases of nonobstructive diseases.

There are a few pathological conditions which do not fit well into either the purely obstructive or the nonobstructive groups. Most of these come to the attention of the urologist for diagnosis as well as treatment and include such conditions as congenital malformations and infections which are not due to obstruction.

Azotemia and/or uremia may occur without bilateral renal disease or bilateral obstruction. Physiologically there are two factors which are important to the production of urine in a normal kidney: (1) volume flow of blood through the kidneys and (2) relative concentration of the blood. Variations in either of these may change the volume output of urine, and if this is reduced below a certain minimum it may give rise to azotemia and/or uremia. Within limits, the volume production of urine varies directly with the blood pressure. Therefore, in conditions of shock azotemia may occur because of insufficient volume flow of blood through the kidneys. In rare instances, such as in cases of thrombosis of the renal veins, this flow may be reduced sufficiently to cause azotemia when blood pressure may not be significantly reduced. The other factor which may vary urinary output in normal kidneys is the relative concentration of the blood. Severe dehydration results in an increased concentration of the blood. This reduces the volume of filtrate produced by glomerular filtration and alters normal tubular functions, which may diminish the volume of urine sufficiently to cause azotemia. These conditions which cause azotemia in the absence of renal disease require a separate heading, which we have designated in this classification as "prerenal azotemia." There is no substantial evidence that azotemia can occur without bilateral renal disease or bilateral obstruction to the urinary tract unless there is decreased volume or increased concentration of the blood flowing through the kidneys. This divides the causes of uremia into four main divisions: (1) medical nonobstructive renal disease, (2) urological nonobstructive renal disease, (3) obstructive renal disease, and (4) prerenal azotemia.

Inasmuch as the uremic state is reversible in most patients who have obstructive renal disease, it is very important to make an early diagnosis of this type of lesion. Bilateral ureteral obstruction is sometimes mistaken for a far-advanced nephritis, and the patient with chronic urinary retention due to prostatic disease is sometimes treated for nephrosis. It seems that such mistakes should never be made, but they do occur sometimes in the best hospitals and clinics.

There are a few symptoms and findings which are common in patients with uremia due to medical nonobstructive renal disease but which are rarely seen in those with obstructive lesions of the kidneys. Headaches, nausea and vomiting, and convulsions in the later stages of the disease are common in nonobstructive cases but do not occur frequently as a result of uremia in cases of obstructive lesions. Characteristic findings in cases of the nonobstructive renal diseases are albumin and casts in the urine, anemia, elevated blood pressure, and eye ground changes. Some of these may occur in the obstructive lesion cases but are much less common. Most cases of nonobstructive medical lesions may be diagnosed without the aid of cystoscopy and x-ray, but investigations with these modalities should be made whenever there is any question as to the correct diagnosis.

Medical nonobstructive renal diseases are divided into three main types: (1) those in which the pathological changes are primarily in the glomerulus, (2) those which show predominantly tubular changes, and (3) those with the important lesions in the vascular system. Although these diseases are medical problems, the urologist should have a comprehensive knowledge of their diagnosis and management. There are no findings which are differentially characteristic of these three types of medical renal disease. There are, however, certain findings which are commoner in one type than in the others. Subcutaneous edema and large amounts of blood and albumin in the urine are more likely to be found in the glomerular group and are less frequent in the others. Oliguria and anuria are more the rule in the group in which the lesion is mostly in the tubules. When the blood vessels of the kidney are predominantly involved, there is more likely to be an increased amount of urine of low specific gravity; high blood pressure is commoner, headache is frequent, and eye ground changes are often found.

Urological nonobstructive renal disease includes a number of kidney lesions which are diagnosed by cystoscopy and x-ray. These are usually cared for by the urologist, but the uremic state which may occur is usually not reversible. Bilateral renal involvement must occur before azotemia becomes evident. This group includes tuberculous and nontuberculous pyonephrosis, polycystic renal disease and other congenital malformations of the kidneys, and metastatic calcification, such as renal calcinosis and that occurring in hyperparathyroidism. Although these last two diseases are primarily medical problems, kidney surgery is sometimes indicated, and the urologist is often called on to aid in making a diagnosis based on the anatomic location of the obstruction to urinary flow.

147
51

Obstructive renal disease is divided into two main types: (1) postrenal obstruction and (2) renal lesions causing obstruction. The first type includes vesical orifice and urethral diseases which result in obstruction to urinary outflow—urethral stricture, calculus, and neoplasm, congenital valves in the posterior urethra, and prostatic obstructive disease. The lesions in the bladder which may result in kidney damage are calculus, neo-

Classification of Causes of Uremia and Most Characteristic Findings

Low values by renal function tests
Elevated nonprotein nitrogen, urea, creatinine, and potassium in blood
Gastrointestinal symptoms
Coma and death in late stages

Medical Nonobstructive Renal Disease

Headache, nausea, vomiting, convulsions
Urine—albumin, blood, specific gravity fixed, casts
Anemia
Blood pressure frequently elevated
Eye ground changes
Diagnosed without cystoscopy

I. Primarily glomerular
- A. Glomerular nephritis
  1. Acute usually in young patients
     Uremia—rare
     Edema
     Urine—albumin 1+, blood 2+
  2. Chronic
     Uremia—frequent
     Urine—albumin 1+, blood, fixed specific gravity
     Anemia 3+
     Blood pressure elevated 3+
  3. Nephrotic syndrome
     Usually in children
     Uremia late
     Edema 4+
     Urine—albumin 4+, blood 0
     Blood—low protein, albumin-globulin ratio reversed
     Blood pressure normal
- B. Lipoid nephrosis
  May be a stage of glomerular nephritis
  Symptoms and findings same as nephrotic syndrome
- C. Eclampsia (toxemia of pregnancy)
  Edema
  Convulsions 3+
  Urine—scanty, albumin 4+
  Blood pressure elevated 4+
- D. Amyloid disease
  Urine—albumin 2+, casts 2+
  Blood—low protein, albumin-globulin ratio reversed
  Blood pressure normal
  Good nephrogram and poor pyelograms with intravenous urogram

II. Primarily tubular
  Oliguria
  Anuria
  Blood pressure normal
- A. Chemical poisoning
  1. Mercury, diethylene glycol, phenol, and so forth
     Urine—albumin, blood, casts
  2. Sulfonamides
     (*a*) Tubular necrosis (see lower nephron nephrosis)
     (*b*) Crystals in tubules (see obstructive lesions)
- B. Lower nephron nephrosis (shock kidneys)
  Usually associated with tissue destruction and shock
  1. Intravascular hemolysis (transfusion reaction)
  2. Severe crushing injuries, burns, and so forth
  3. Sulfonamide poisoning
  Urine—scanty, albumin
- C. Multiple myeloma
  Severe back pain
  Urine—Bence Jones protein
  Characteristic bone marrow and x-ray findings

III. Primarily vascular
  Urine—albumin 1+, specific gravity fixed low
  Blood pressure elevated
- A. Malignant nephrosclerosis
  Urine—albumin and blood late, casts 1+
  Blood pressure elevated 3+
  Eye ground changes
- B. Periarteritis nodosa (rare)
  Resembles acute glomerular nephritis
  Muscle biopsy
- C. Intercapillary glomerulosclerosis (in diabetes, Kimmelstiel-Wilson disease)
  Edema
  Urine—albumin and sugar 4+, blood 0
  Blood pressure elevated
  Eye ground changes
- D. Bilateral cortical necrosis (rare)
  In eclampsia, some infectious diseases and chemical poisoning
  Clinical diagnosis rare
- E. Renal artery occlusion—embolism or thrombosis
  Pain—lumbar
  Urine—scanty, blood

Urological Nonobstructive Renal Disease

Urine—albumin +, 0; blood 1+, 0; pus +, 0; casts 0
Eye ground changes rare
Diagnosed by cystoscopy and x-ray

I. Severe bilateral infection
  Intermittent fever
  Usually cystitis
- A. Tuberculous pyonephrosis
  Frequently no lumbar pain
  Urine—acid, blood, pus, no bacteria except tubercle bacilli (difficult to discover)
- B. Chronic pyelonephritis or pyonephrosis
  Blood pressure sometimes elevated

II. Diffuse calcification
  Renal obstruction by infection, fibrosis, and replacement by calcification; may cause obstruction
- A. Hyperparathyroidism
  Urine and blood calcium elevated
  Blood phosphates low
- B. Renal calcinosis (rare)
  Etiology not known—may be from sulfonamides, heavy metals, faulty calcium and phosphate metabolism

III. Congenital malformations (bilateral)
  May not cause uremia early in life
- A. Renal agenesis and hypoplasia
  Absence of, or small kidney
  Urine—scanty, may be low specific gravity
- B. Polycystic renal disease
  Kidneys usually palpable
  Urine—may be pus, blood or albumin, and low specific gravity
  Blood pressure elevated in 50% of cases
  Family history—occurs in several persons in one family for several generations

Obstructive Renal Disease

Pain usually present—bladder and/or lumbar
Urine—albumin 0 (unless blood or pus), casts 0, frequently infected
Does not cause headaches, convulsions, elevated blood pressure, eye ground changes
Diagnosed by cystoscopy and x-ray

I. Postrenal obstruction
- A. Vesical orifice and urethra
  Dysuria
  Frequency and urgency
  Bladder distended
  1. Bladder neck contracture
  2. Prostate
     (*a*) Benign hypertrophy—enlarged, smooth, well defined, and elastic
     (*b*) Carcinoma—hard, fixed, sometimes enlarged, and irregular
  3. Congenital valves
  4. Urethral stricture, calculus, neoplasm
- B. Bladder
  Bilateral ureterovesical involvement
  1. Paralysis
     Incontinence
     Bladder distended
     Other neurological findings
     Characteristic cystogram
  2. Neoplasm
     Frequency, urgency, and pain marked
     Urine—blood
  3. Calculus
     Pain, dysuria
     Stream starts and stops
     Urine—blood and pus
- C. Ureteral
  Bilateral involvement
  Lumbar pain referred to groin
  Increasing oliguria
  1. Intrinsic
     (*a*) Angulation, stricture
     (*b*) Calculi, sulfonamide crystals, urine—blood 1+
     (*c*) Neoplasm (rare), urine—blood 2+
     (*d*) Edema (postcystoscopic)
  2. Extrinsic
     Urine usually normal
     (*a*) Carcinoma cervix—extension to ureters
     (*b*) Aberrant vessels, fibrous bands
     (*c*) Pressure from other extraureteral disease
     (*d*) Trauma (pelvic surgery)

II. Renal lesions causing obstruction
- A. Calculi, neoplasm
  Urine—pus and blood
- B. Tubular obstruction
  Sulfonamide crystals
  Urine—scanty or none, crystals and blood

Prerenal Azotemia:

Oliguria and anuria
Urine—no albumin, blood, pus, or casts
No eye ground changes

I. Hypotension (circulatory collapse)
  Urine—specific gravity normal
- A. Shock and hemorrhage
- B. Cardiac decompensation
- C. Asthenia in terminal stage of many diseases

II. Dehydration
  Urine—high specific gravity
- A. Insufficient ingestion of fluids
- B. Abnormal loss of fluids—diarrhea, vomiting, and so forth
- C. Decreased absorption of fluids—intestinal obstruction, paralytic ileus, and so forth

V 14
1951

plasm, and paralysis of the bladder due to a central nervous system lesion. Obstructive lesions above the bladder must be bilateral to cause uremia, or if the obstruction is unilateral, there must be some other disease or abnormality in the opposite kidney. Ureteral obstruction may be intrinsic (such as angulation, stricture, calculus, neoplasm, edema, myoneural dysfunction) or extrinsic (such as carcinoma of the cervix, ureteral injury, fibrous bands or aberrant vessels).

The second type of obstructive renal disease (renal lesions causing obstruction) contains only a few pathological conditions. When a calculus or a neoplasm is in the kidney pelvis, obstruction to urinary outflow and resulting hydronephrosis and uremia may occur if there is bilateral involvement. Obstruction in the renal tubules frequently results in uremia. The commonest cause of tubular obstruction is the deposition of sulfonamide crystals.

Most patients in whom there is obstruction to urinary outflow have pain. Although this symptom almost always occurs during the acute stage of urinary obstruction, before uremia develops, it frequently persists to some extent until the obstruction is relieved. The absence of pain does not, however, rule out obstructive urinary tract lesions, and whenever a patient has uremia the physician should be very certain that there is free flow of urine throughout the urinary system. The fact that the uremic state is reversible in most patients with obstructive lesions makes it doubly important to make a correct diagnosis early.

The absence of casts and large amounts of albumin in the urine, the failure to find eye ground changes, the presence of normal blood pressure, and the abnormal cystoscopic and x-ray findings are the distinguishing characteristics in this division of the causes of uremia. It must never be forgotten, however, that two or more diseases may occur simultaneously in the same patient. A man with prostatic obstructive disease of long standing may have uremia due to renal damage from the urinary obstruction, and at the same time he may have hypertensive vascular disease and nephrosclerosis. Therefore, the most characteristic findings in this classification of uremia pertain to the specific lesion rather than to the patient, who might have two or more concurrent diseases.

The accompanying Table is designed to give an overall picture of a classification of uremia based on the diseases or abnormal states which might cause toxemia due to inadequate urinary output. The characteristic findings are from simple tests and examinations which any physician can make without extensive or elaborate equipment. It is not intended to include every detail of the causes of uremia, nor does it mention the more elaborate tests of differential renal function, of blood constituent determinations, or of more technical examinations of the patient. Its chief objective is to give the general practitioner a bird's-eye view of the subject, to help him organize his thinking, and to suggest simple methods of differentiation.

1216 Wilshire Blvd. (Dr. Barnes).

USE OF DIURETIC AGENTS

Henry A. Schroeder, M.D., St. Louis

The term "diuresis" is derived from the Greek διά, meaning "through" and οὐρεῖν, to urinate, and implies not only an increased excretion of urinary water, but also an increase in other urinary constituents. While some diuretic agents actually promote the excretion of urine, others, especially the more useful ones, act primarily on one constituent of urine, increasing the others only secondarily and not always regularly. Therefore, the principal actions of the various diuretic agents must be considered in relation to special therapeutic problems.

At the present, diuretics are used mainly to remove via the kidneys excess fluid and electrolytes that have been retained in the body, although diuretics may also be employed for irrigating the urinary passages with water, for promoting dehydration, or for establishing a normal urinary output in oliguric states. Therefore, their principal use is in edema. Since edema fluid is composed mainly of water and electrolytes, especially sodium chloride, the action of diuretics on both water and salt must be examined. Under certain regimens they can cause depletion of either water or salt, although their use is usually directed towards promoting excretion of both. The therapeutic effects of diuretic drugs depend on their primary actions, which should be considered in order to understand complications arising from their use.

The present discussion is concerned with the primary actions of these agents, with various untoward manifestations of their actions, and with a recapitulation of the dangers in their use in the light of recent experimental findings. Illustrative examples which are given in the figures and tables are based on 40 cases of severe congestive circulatory failure studied in hospital under various conditions with prolonged control periods, chloride balances being measured.[1]

In Table 1 is listed a simplified summary of the known actions according to the available evidence. Certain ones, apparently, can increase glomerular filtration rate, by either direct or indirect (cardiac) actions, thereby providing greater flow of urine through the renal tubules. If the absolute rate of tubular reabsorption of water and electrolytes is unchanged, diuresis results. Others act by

Read before the Interim Session of the American Medical Association, Cleveland, Dec. 6, 1950.

From the Hypertension Division, Department of Internal Medicine, Washington University School of Medicine, St. Louis, under a grant-in-aid from the National Heart Institute.

1. (*a*) Schroeder, H. A.: Studies on Congestive Heart Failure: The Importance of Restriction of Salt as Compared to Water, Am. Heart J. **22**: 141, 1941. (*b*) Futcher, P. H., and Schroeder, H. A.: Studies on Congestive Heart Failure: Impaired Renal Excretion of Sodium Chloride, Am. J. M. Sc. **204**: 52, 1942. (*c*) Schroeder, H. A.: Studies on Congestive Circulatory Failure: III. The Relation of Edema to Urinary Chlorides, Circulation **1**: 481, 1950.

being filtered through the glomeruli, and being either relatively inabsorbable substances or being present in high concentrations, interfere with the tubular reabsorption of water and electrolytes because of their osmotic effect. Others specifically depress the tubular reabsorption of salts, providing high concentrations in tubular urine which hinders reabsorption of water. The net effect on the urine is also indicated in the table. The exact nature of the intratubular processes which result in diuresis is in most instances imperfectly understood. A recent excellent review by Pitts and Sartorius,[2] from which most of this information was obtained, considers these questions in detail.

The primary indication for water is in dehydration accompanied with concentration of electrolytes in extracellular fluids. Conversely, the primary contraindication for water is in overhydration, which is accompanied by dilution of electrolytes in extracellular fluids. Although this may seem an obvious rule, it is often followed more in the breach than in the observance, water being given in copious amounts intravenously in an attempt to "break through" an oliguria induced by previous overhydration, only to cause further overhydration of body cells.[4] The indiscriminate use of water is to be avoided, especially in the presence of even minimal renal functional impairment. Overhydration denotes an unhealthy state, and it

TABLE 1.—*Principal Actions of Various Diuretic*

Diuretic	Mobilization of: Intracellular Fluid	Mobilization of: Extracellular Fluid	Cardiac Action	Renal Action: Glomerular Filtration Rate Increased	Renal Action: Tubular Reabsorption Specifically Depressed: Salt	Renal Action: Tubular Reabsorption Specifically Depressed: Water	Urinary Excretion Increased: Water	Urinary Excretion Increased: Salt	Urinary Excretion Increased: Other Substances
Water	0	0	0	+?	0	++++	++++	+	±
Alcohol	+?	?	0	0	0	++++	++++	+	?
Osmotic diuretics									
NaCl 0.85%	0	0	0	0	0	0	0	0	0
NaCl concentrated 5.85% *	+	0	0	0	0	+++	+++	0	?
NaCl dilute	0	0	0	0	0	++	++	±	±
K salts †	±	0	+	0	0	....	+	+	±
Neutral substances									
Urea †	0	0	0	0	0?	....	++	++	+
Dextrose †	±	+	0	0	0?	....	+	+	±
Acidifying salts †	+?	0	0	0	+ (base)	....	+	+ (base)	+
Plasma oncotic affectors, esp. serum albumin †	0	++++	0	0	0	++	++++	+	±
Xanthines									
Caffeine	0	0	+	+	?	+?	+	+	++
Theobromine	0	0	++	+	?	+?	+++	++	+
Theophylline †	?	+?	+++	+	+++	....	+++	+++	+++
Mercurials									
Containing Theophylline †	0	0	++	±	++++	....	+++	++++	+
Not containing Theophylline †	0	0	0	0	++++	....	+++	++++	+
Digitalis	0	?	++++	++	0	0	++	++	+
Thyroid	?	?	+++	+++	?	?	++	++	+
Parathyroid †	?	?	?	?	+?	....	++	+	+ (PO_4)

* Cardiac function improved in overhydration.

WATER

The net effect of excessive water ingestion in normal individuals is to cause some dehydration, resulting from a larger volume of urine than that ingested and a loss of salt. Water is therefore a true water diuretic (or hydruric) agent. Schemm [3] has utilized this principal in the treatment of congestive circulatory failure. A study of the effects of low and high water intakes in this condition has revealed that an adequate volume of urine is usually necessary for the excretion of chlorides, but that chloruesis does not invariably accompany a high intake of water.[1c] Among the many factors concerned in the edema of congestive failure may be disturbances of the posterior pituitary. Therefore, water as a diuretic in this condition has its limitation (Fig. 1).

2. Pitts, R. F., and Sartorius, O. W.: Mechanism of Action and Therapeutic Use of Diuretics, J. Pharmacol. & Exper. Therap. **98**: 161, 1950.

3. Schemm, F. R.: A High Fluid-Intake in the Management of Edema, Especially Cardiac Edema: The Details and Basis of the Régime, Ann. Int. Med. **17**: 952, 1942.

4. Schroeder, H. A.: Renal Failure Associated with Low Extracellular Sodium Chloride: The Low Salt Syndrome, J. A. M. A. **141**: 117 (Sept. 10) 1949.

5. Strauss, M. B.; Rosenbaum, J. D., and Nelson, W. P., III: The Effect of Alcohol on the Renal Excretion of Water and Electrolyte, J. Clin. Investigation **29**: 1053, 1950.

can easily be induced if urinary output is low from causes other than dehydration.

ALCOHOL

Alcohol acts in a manner somewhat similar to the way water acts, possibly by inhibiting hypophysial mechanisms, but causing true dehydration, with relatively less loss of electrolytes [5] and consequent concentration of body fluids. Alcohol, therefore, should not be used in dehydration, but is theoretically of value in overhydration when water loss without salt loss is desirable. It has received little attention in this respect, but can be considered wholly hydruric in action.

OSMOTIC DIURETICS

Sodium Chloride.—Concentrated sodium chloride injected intravenously in normal persons can act as a diuretic, probably by its osmotic effect in the renal tubular lumina inhibiting reabsorption of water, and possibly by its central action on inhibiting posterior pituitary secretion. It can induce cellular dehydration. In states of overhydration it restores to normal a disturbed electrolyte balance which in some manner causes oliguria.[4] It is therefore indicated when plasma sodium and chloride

V 14
1951

values are low without acidosis or alkalosis; molar solution (5.85%) is the most convenient form to use, as calculations of deficits can be readily converted into volumes necessary for restoration of balance (1.0 mEq. being in 1 ml. of the solution). "Normal" or "physiological" (isotonic) saline solution is not a diuretic, merely expanding the extracellular fluid space. Dilute solutions of sodium chloride (or the equivalent; e. g., half "normal" and half dextrose in water) are most commonly employed as a diuretic and for replacement of fluids lost through sweat, stools, and expired air; although the amounts given are seldom based on body losses and needs for water and salt, well-functioning kidneys usually can compensate for errors of administration.

Potassium Salts.—Potassium chloride, nitrate, bicarbonate, acetate, and citrate act as diuretics, probably by disturbing intratubular osmotic equilibrium and promoting loss of water. Sodium salts, except chloride, are also excreted by edematous patients, although not by normal subjects. Other salts than the chloride cause chloruresis. They are only moderately effective. In chronic renal diseases they must be used with caution. Although disturbances in the excretion of potassium usually are relatively terminal events in uremic states, they should not be employed when the serum potassium is elevated or excretion is delayed, due to their serious cardiotoxic effects.

Acidifying Salts.—Ammonium and calcium chloride and nitrate are the commonest of the salts given to cause mild acidosis and diuresis. Their actions depend on release of the anion which replaces bicarbonate. Cation exchange resins have the same effect, removing base from the gastrointestinal fluids and leaving the anion, principally chloride, to be absorbed and excreted by the kidneys. The chloride carries with it sodium, potassium, and calcium. Presumably the water loss results from intratubular osmotic disequilibrium, as in the other osmotic diuretics. However, the kidney is also stimulated to form ammonia in order to conserve sodium, a further factor in promoting urinary excretion. Obviously these drugs should not be employed when limitation of the ability of the kidney to form ammonia is present, or severe acidosis may result. Therefore, in the presence of renal disease, acidifying salts are contraindicated; they may precipitate uremia. Their commonest use is for their synergistic action with mercurial diuretics.

Nonionizing Substances.—The neutral substances, such as urea, dextrose, other sugars, and other materials filtered by the glomeruli act as osmotic diuretics in a manner similar to the salts and acids. Urea is the most useful, not being metabolized although reabsorbed by the tubules; dextrose less so, because it is both metabolized and reabsorbed. Sucrose may cause renal tubular damage. Mannitol, sorbitol, and sorbitan are not appreciably metabolized and are not reabsorbed; they must be given intravenously and will cause excretion of salt and water. The ideal osmotic diuretic combines, among other attributes, lack of metabolic breakdown and lack of renal tubular reabsorption.

Serum Albumin.—In hypoproteinemia there is excessive reabsorption of salt and water by the renal tubules, leading to edema. The exact mechanism is unknown; plasma oncotic pressure is lowered, either by excessive excretion or destruction of plasma proteins, or by insufficient synthesis. In these circumstances, raising plasma oncotic pressure by the intravenous injection of salt-free albumin will result in diuresis of water, salt being lost only when the loss of water results in concentration of sodium.[6] Hypoproteinemia due to starvation

Agents in Normal and Edematous States

Principal Contraindication	Principal Indication	Depletion Possible If Intake is Restricted	
		Water	Salt
Overhydration with oliguria	Dehydration with high electrolytes	Yes	Yes
Dehydration	Overhydration	....	....
Edema with normal electrolyte balance or dehydration	Dehydration with normal electrolytes	No	No
	Overhydration with low electrolytes	Yes	No
Overhydration	Dehydration with moderately high electrolytes	Yes	No
Hyperkalemia or renal diseases	Edema with normal electrolytes	No	No
Azotemia	Edema with fair renal reserve	No	No
Hyperglycemia	Transient effect only	No	No
Acidosis or renal diseases	Edema with good renal reserve	No	Yes (Na)
Cardiac insufficiency due to other causes than hypoproteinemia	Hypoproteinemia	No	No
None	Not used often; side actions	No	No
	Edema with low electrolytes (?)	No	No
Cardiac arrhythmias	Edema with normal electrolytes	No	?
Cardiac arrhythmias if parenteral	Edema with normal electrolytes and fair renal reserve	No	Yes
Overhydration	.....		
Normal cardiac output with small heart	Edema due to myocardial failure	No	No
.....	Occasionally in nephrotic syndrome	?	?
Calcium loss	.....	No	Yes (Ca)

† The osmotic diuretics probably exert their principal action on water in the lumen of the renal tubule. After filtration, the relatively higher concentrations of these substances prevent the reabsorption of water. The more rapid flow of urine through the tubule serves to inhibit in part the reabsorption of salt. Evidence for specific tubular depression of salt reabsorption by these substances is not conclusive. In a similar manner, water reabsorption is limited by those drugs which specifically depress tubular salt reabsorption, the salt itself acting as an osmotic diuretic within the tubule.

6. Orloff, J.; Welt, L. G., and Stowe, L.: The Effects of Concentrated Salt-Poor Albumin on the Metabolism and Excretion of Water and Electrolytes in Nephrosis and Toxemia of Pregnancy, J. Clin. Investigation **29**: 770, 1950.

can be reversed by protein feeding which results in diuresis; the addition of salt to the food before proteins have been synthesized can cause increase in the edema.

XANTHINE DIURETICS

Mode of Action.—The action of the xanthine diuretics is not well understood. Since xanthine compounds act as vasodilator substances, it was thought possible that diuresis is attained by renal afferent arteriolar dilatation, thereby promoting greater renal blood flow and a larger volume of glomerular filtrate. Direct observations in frogs' kidneys indicated that this may be so. If it is, the increased urine volume should contain only a moderate amount of sodium and chloride and relatively greater amounts of water, tubular reabsorption of salt being unchanged. The evidence at the present time is conflicting. Cases in which the xanthine diuretics caused impairment of tubular reabsorption of sodium have been observed; and others, in which the diuretics apparently caused increased glomerular filtration with little increase in the concentration of sodium. Chloride-balance studies have been inconsistent.[7] Although usually the concentration of chloride in the urine increases moderately with the greater output of water (Fig. 2), it may increase con-

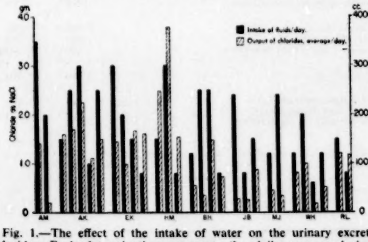


Fig. 1.—The effect of the intake of water on the urinary excretion of chlorides. Each determination represents the daily average during 7-to-15-day periods of constant water intake. In the cases of A. M., A. K., H. M., and W. H., the chloride output increased on a high intake of water. In the cases of E. K. and R. L. the chloride output was unaffected, while in one period in the cases of B. H. and M. J. it was depressed. All patients suffered from severe congestive failure and were given no diuretic drugs during these studies.

siderably without change in water (Fig. 3), and occasionally the urine volume becomes larger without much concomitant chloruresis (Fig. 4).

It is of interest that the experimental evidence, while favoring the concept that xanthine diuretics interfere in some way with renal tubular reabsorptive mechanisms, also suggest that inconstant but sometimes large increases in filtration rate can occur.[8] In congestive failure and other edematous states, where the action of these drugs is of paramount importance, apparently they may act somewhat differently from the way they act in normal subjects. Values for urinary sodium in excess of those found in plasma have been reported in acute experiments in both normal and cardiac subjects [8]; this would indicate a tubular action equal in potency to that of mercury, a fact not borne out by clinical observations. An action of these drugs which complicates analysis is that on the heart; cardiac output is increased by either peripheral vasodilation or direct myocardial stimulation or by both. Improvement in cardiac output leads usually to

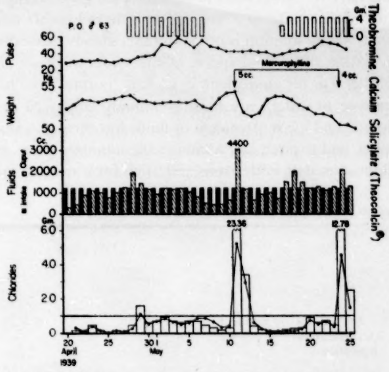


Fig. 2.—The effect of theobromide calcium salicylate (theocalcin®) and mercurophylline on the excretion of chloride and water in patient P. O., a 63-year-old man with arteriosclerotic heart disease and complete heart block. The first administration of the drug induced elevation of the pulse rate, a slight increase in urinary volume, and a moderate increase in urinary chlorides with a loss of about 1.6 kg. of weight. When it was discontinued there were four days of water retention. Mercurophylline given intravenously resulted in marked loss of water, chlorides, and weight, but was followed by water retention. A second course of theobromine calcium salicylate caused a diuresis principally of water with concomitant loss of weight that was presumably composed of the water previously retained. Chlorides: the open bars indicate the total daily excretion as NaCl; the dots indicate the urinary concentration in grams of NaCl per liter; and the solid horizontal lines indicate the dietary intake.

improvement in a functionally diminished renal circulation, which might promote diuresis. At present, one is forced to the conclusion that the xanthine diuretics act (1) by increasing cardiac output, (2) by dilating afferent

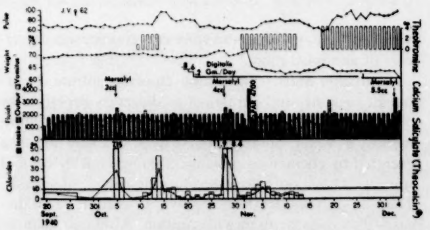


Fig. 3.—The effect of theobromine calcium salicylate (theocalcin®), mersalyl, and digitalis on the course of congestive failure. Patient J. V. was a 52-year-old woman with arteriosclerotic heart disease with a normal sinus rhythm and ascites. After a control period in which weight was stabilized, injection of mersalyl caused excretion of chlorides with little increase in urinary volume or change in weight. Theobromine calcium salicylate in this case appeared to elevate the pulse rate, increase the renal excretion of chlorides, and induce the loss of only 0.5 kg. with little effect on urinary water. Full digitalization reduced the average pulse rate slightly and was accompanied with a gradual increase in body weight not controlled by an injection of mersalyl. At paracentesis 4,700 cc. of fluid was removed from the abdominal cavity. The administration of theobromine calcium salicylate this time appeared to cause a loss of 1.0 kg. with a rise in the pulse rate and a moderate increase in urinary chlorides. Cessation of the drug was accompanied with water retention and gain in weight which was reversed by a third course of theobromine calcium salicylate.

Chlorides: the open bars indicate the total daily excretion as NaCl; the dots indicate the urinary concentration in grams of NaCl per liter; and the solid horizontal lines indicate the dietary intake.

7. Schroeder, H. A.: Studies on Congestive Circulatory Failure: IV. Circulation **4**: 87, 1951.

8. Davis, J. O., and Shock, N. W.: The Effect of Theophylline Ethylene Diamine on Renal Function in Control Subjects and in Patients with Congestive Heart Failure. J. Clin. Investigation **28**: 1459, 1949.

renal arterioles, or (3) by diminishing tubular reabsorptive mechanisms for sodium.

Toxic Reactions.—Gastrointestinal disturbances due to the irritative action of theobromine and theophylline preparations occasionally preclude their use; judicious administration with food may avoid this side effect—otherwise they appear to have low toxicity. Elevation of the pulse rate is frequently caused by these drugs, and appears to be uninfluenced by prior digitalization in patients with both normal rhythm and auricular fibrillation (Fig. 3). In the latter, pulse deficit may increase (Fig. 5). In complete heart block, beneficial elevation of the pulse rate may occur for long periods (Fig. 2).

Diuretic Effects.—As has been stated, the xanthine diuretics sometimes cause a water diuresis without appreciable chloruresis, and more frequently lead to outpouring of both. At times they are more effective than mercurial diuretics (Fig. 2); at others, less so (Fig. 3). Some tolerance may develop, which is readily reversed by withholding the drug for a few days.

MERCURIAL DIURETICS

Mode of Action.—Mercury acts primarily by increasing the renal excretion of sodium chloride. The evidence is conclusive that the reabsorption of filtered salt by the renal tubules is depressed.[2] Presumably the proximal convoluted tubules are principally affected, although that has not been decided, and the manner in which soluble mercury is given is relatively unimportant. By virtue of the slow liberation of ionic mercury, the mercurial diuretics are comparable and similar to mercuric chloride although their actions are more prolonged and less potent. The diuresis, which is actually "saluresis," can

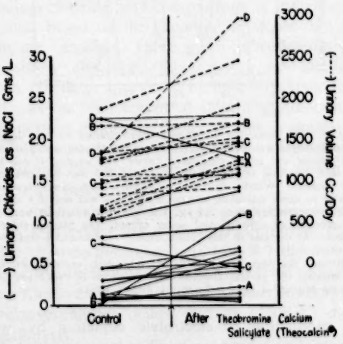


Fig. 4.—The effect of theobromine calcium salicylate (theocalcin®) on urinary volume and concentration of chlorides in 17 cases of congestive failure. The usual response was an increase in the output of water accompanied with a moderate increase in output of chlorides. This is shown by the pair of curves marked *A*. The response however varied considerably. Occasionally there was marked increase in the concentration of chlorides without change in urine volume (pair of curves *B*). There was also seen a marked increase in urinary volume with moderate decrease in chloride output (pair of curves *C*), and in one case an even greater water diuresis with a considerable decrease of chloruresis (pair of curves *D*).

be considered as the first stage of mercurial poisoning of the renal tubules.

It is not yet known whether mercury inhibits tubular reabsorption of sodium ion, chloride ion, or both. Mercurial diuretics increase the urinary excretion of chlorides (Tables 2 and 3). This chloruresis is usually accompanied with sodium, but under certain circumstances can be accompanied by increased amounts of potassium, calcium, and magnesium.[9] Uric acid excretion is also increased, a sign of renal tubular depression.[10] Therefore, losses of other cations than sodium may occur, and, although their deficiences have not been generally recognized, it must be borne in mind that dietary intakes of

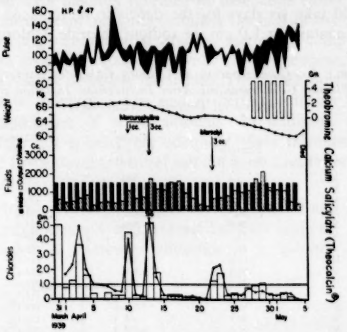


Fig. 5.—The effect of mercurial and xanthine diuretics on ectopic ventricular beats in patient H. P., a 47-year-old man with severe rheumatic heart disease and preponderately right-sided failure. The pulse deficit shown in the shaded area was owing entirely to ectopic ventricular beats which were unaffected by mercurial diuretics but were increased by theobromine calcium salicylate (theocalcin®). In other cases the pulse deficit in auricular fibrillation was increased by this drug. In spite of the increasing pulse rate, better diuresis of water (without much chloruresis) was obtained by theobromine calcium salicylate than by mersalyl.

Chlorides: the open bars indicate the total daily excretions as NaCl; the dots indicate the urinary concentration in grams of NaCl per liter; and the solid horizontal lines indicate the dietary intake.

these minerals should be adequate during protracted mercurial diuresis. For practical clinical purposes, however, we may assume that sodium chloride is affected, carrying excess water in a manner similar to the action of osmotic diuretics and thereby promoting loss of edema fluid.

Mercurial diuretics appear to act in all nonrenal edema. They also act in the absence of edema. The electrolytic state of the intracellular fluid mass is of considerable importance, however, in determining whether or not they will act. Hypochloremia and hyponatremia usually cause resistance to the chloruretic action of mercury.

When the dietary intake of salt is low, the injection of mercurial diuretics will lower the concentration of plasma chloride and sodium, as might be expected from their action. This can lead to serious consequences if not recognized. Similarly the concentration of chloride in the urine can exceed the levels found in plasma (100 mEq. per liter). When this occurs, edema fluid as well as plasma is depleted of chloride, since more salt than the normal equivalent of water has been excreted (Table 2). In this lies one of the hazards of mercurial diuretics.

9. Farnsworth, E. B., and Krakusin, J. S.: Electrolyte Partition in Patients with Edema of Various Origins: Qualitative and Quantitative Definition of Cations and Anions in Cardiac Decompensation, J. Lab. & Clin. Med. 33:1534, 1948.

10. Grossman, J.; Weston, R. E.; Edelman, I. S., and Leiter, L.: Studies on Thiomerin—a Subcutaneously Administerable Mercurial Diuretic, Circulation 1:508, 1950.

Unless the relative deficit of salt is replaced by the dietary intake, which is usually kept low in edematous patients, salt depletion will occur. The magnitude of the deficit can be illustrated by an example. In this case almost 30 gm. of salt as chloride was excreted in the urine after mercurial injection in a volume of about 4,200 ml., at a concentration of 7.1 gm. per liter. The concentration of chloride in plasma (and therefore edema fluid) was approximately 5.7 gm. per liter. The deficit in this case amounted to 1.4 gm. per liter, or a total of 5.9 gm. It would take six days for the deficit to be replaced on a diet containing 1.0 gm. of sodium chloride. Chloruresis

TABLE 2.—*Concentration of Urinary Chlorides Exceeding Plasma Concentrations After Intravenous Injection of Mercurial Diuretics* (Cardiacs)*

Diuretic †	NaCl ‡ Excreted, Gm./24 Hr.	Urine Volume, Cc./24 Hr.	Concentration of Chlorides in Urine, mEq./L.
M	7.4	132	135.7
M	15.0	2,030	126.5
M	17.1	2,410	121.2
M	15.7	2,210	121.2
M	29.8	4,200	121.2
M	11.7	1,670	119.6
M	12.7	1,840	117.9
M	12.8	1,880	116.1
M	27.6	4,120	114.5
M	23.4	3,545	112.6
S	20.5	3,155	111.1
S	19.6	3,015	111.1
M	10.1	1,555	111.1
M	22.6	3,531	109.4
S	13.5	2,180	106.0
M	4.8	775	106.0
M	17.9	2,985	102.5
M	22.2	3,765	101.0
M	8.2	1,380	101.0

* Doses 2.0 to 5.0 cc.
† M is mercurophylline; S is salyrgan ® (mersalyl).
‡ Calculated from chloride.

TABLE 3.—*Chloruresis Without Concomitant Diuresis After Intravenous Injection of Mercurial Diuretics* (Cardiacs)*

Diuretic †	NaCl ‡ Excreted, Gm./24 Hr.	Urine Volume, Cc./24 Hr.	Concentration of Chlorides in Urine, mEq./L.
M	4.8	774	106.0
M	4.4	880	85.5
M	1.8	485	63.2
S	1.7	680	42.7
M	2.1	875	41.0
S	1.8	750	41.0
S	1.5	1,000	25.6
M	0.8	800	17.1
S	0.69	985	12.0
S	0.2	500	6.8
S	0.09	900	2.6
M	0.09	900	2.6

* Doses of 2.0 to 5.0 cc.
† M is mercurophylline; S is salygran ® (mersalyl).
‡ Calculated from chloride.

can occur with graded doses without increase in urinary water, again indicating that loss of salt is the primary effect of the drugs (Table 3).

Approximately the maximal concentration of urinary chlorides occurs in the first urine passed after injection, and is maintained for about 24 hours. Increased but lessened concentrations are usually present in the 48-hour specimen and occasionally in the 72-hour one, attesting to the slowness with which mercury is excreted in cardiac patients. This fact in itself is strong argument against the daily use of mercurial diuretics, for concentrations in excess of the amount excreted might accumulate.

Signs of Overdosage.—The most prominent sign of overdosage of a mercurial diuretic, when the patient is on a low salt intake, is a loss of weight on the day after injection followed by a gain. The subsequent gain is caused by retention of water and is accompanied with dilution of body fluids (Fig. 6). Measurements of urinary chlorides following such an event have shown that they may almost completely disappear from the urine for several days. If the injection is repeated promptly, the effect upon excretion of urinary chlorides and water is usually much less, and may be negligible. The "low-salt syndrome" may develop under this circumstance, especially when fluid intake is elevated.

Toxic Reactions.—Mercurial diuretics have a certain toxicity under some conditions. This depends on direct mercurial poisoning, immediate effects of substances contained in the mercurial complex or mixed with it,

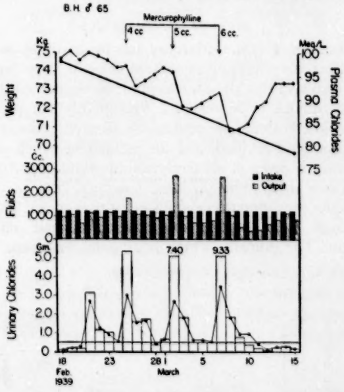


Fig. 6.—The induction of relative overhydration or salt depletion by mercurial diuretics in patient B. H., a 65-year-old man with arteriosclerotic heart disease and severe congestive failure with ascites. It can be noted that each injection of mercurophylline was followed by chloruresis and some diuresis. Weight increased markedly each time, however, due probably to water retention, so that the net loss was only 0.9 kg. although the greatest loss had been 3.5 kg. The last two injections were followed by depression of chloride and water output. The plasma chlorides fell markedly. At the end of this course patient experienced symptoms of salt depletion.

Chlorides: the open bars indicate the total daily excretion as NaCl; the dots indicate the urinary concentration in grams of NaCl per liter; and the solid horizontal lines indicate the dietary intake.

and production of electrolyte depletion by overuse. Mercurial poisoning occurs when large or repeated doses are given to patients with kidneys so diseased by glomerulonephritis, nephrosclerosis, or other renal conditions that excretion of the drugs is delayed or inhibited. Normal kidneys can excrete most of the injected mercury in 24 hours; kidneys of cardiac patients may take 48 hours, or even longer; while diseased and insufficient kidneys show a much slower excretion rate.[11] Tubular degeneration has been seen in such cases after repeated administration of mercurial diuretics.

The drug most commonly employed as an adjunct to organic mercurial compounds is theophylline. Although

11. Burch, G.; Ray, T.; Threefoot, S. A.; Kelly, F. J., and Svedberg, A.: The Urinary Excretion and Biologic Decay Periods of Radio Mercury Labeling a Mercurial Diuretic in Normal and Diseased Man. J. Clin. Investigation **29**: 1131, 1950.

V 14
1951

the amount is relatively small (35 to 50 mg. per milliliter), there is enough theophylline in the material to affect the circulation. In the case of mersalyl and theophylline, the xanthine is mixed or loosely bound to the mercurial complex and acts almost immediately; in the case of mercurophylline and similar drugs it is chemically combined and acts more slowly. The immediate reactions to intravenous injection include tachycardia, palpitation, dyspnea, orthopnea, fall in venous pressure, and, rarely, death. In my opinion these reactions are not seen after the intravenous injection of mersalyl or of other compounds not containing theophylline.

Overuse, especially repeated injection of mercurial diuretics, will lead to excessive loss of sodium chloride from extracellular fluids, and may cause the development of the "low-salt syndrome" if fluid intake is unrestricted and dietary salt is low.[4] Mental symptoms, weakness, vomiting, apathy, thirst, progressive oliguria, and nitrogen retention are the results. Plasma sodium and chloride values are low. There is probably a shift of sodium and chloride from extracellular to intracellular spaces and a loss of potassium as cells become overhydrated. If the left ventricle is under strain, pulmonary edema may occur.

Various Compounds.—There appears to be little difference in the action of the various mercurial diuretics, one being equally as effective as another on chloride and sodium excretion when the amount of mercury is considered. In fact, mercuric chloride, weight for weight, would probably be as effective as the organic compounds, were it not so soluble and readily excreted; this property might lead to renal tubular degeneration. It must be reemphasized, however, that these agents act primarily on sodium chloride, and comparisons of individual superiorities based on the excretion of water or loss of weight are valueless. Those given subcutaneously are more slowly absorbed and therefore act for longer periods, but there appears to be little advantage to this quality, as the total output of chlorides and sodium is the important criterion. Tables 2 and 3 suggest that mersalyl is somewhat less effective than mercurophylline; a comparison of many other injections not shown does not bear out this conclusion.[7]

In a total number of 63 mercurophylline injections, 16 (25.4%) exceeded the plasma concentration, causing relative chloride deficit, and six (9.5%) did not cause diuresis. In a total of 38 mersalyl (salygran*) injections, three (7.9%) exceeded the plasma concentration, causing relative chloride deficit, and six (15.8%) did not cause diuresis.

Combined Use of Acidic Salts with Mercurials.—Certain acidifying salts, especially ammonium chloride and ammonium nitrate, have been frequently used in conjunction with injections of mercurial compounds, and have been reported to augment the action of mercury. Augmentation does not always occur. When it does, the effect may be marked. An explanation for this synergism lies in the action of the acidic salts, which not only can cause osmotic tubular diuresis, but also increase the renal excretion of bases, including sodium. Acidifying salts used in patients with severe renal diseases can precipitate uremia.

Effect of Repeated Injections.—Many therapeutic doses of mercurial diuretics may be given over a period of several years without demonstrable deleterious effects. Two cases with which we have had experience received a total of approximately 1,200 and 1,500 ml. of mersalyl or mercurophylline in doses of 3 to 6 ml. at weekly intervals. Both patients died of causes other than congestive failure; at autopsy no renal lesions suggestive of the toxic action of mercury could be found, and analysis of their kidneys for mercury revealed no detectable traces. Such instances point out quite definitely the lack of toxicity of even large amounts of organic mercurial compounds when given at suitable intervals. Daily injections, however, can be definitely hazardous. The rather slow excretion of mercury [11] can lead in certain subjects to the accumulation of toxic amounts. In addition, unless dietary salt is relatively adequate, daily injections can lead to the development of salt depletion and the low-salt syndrome.

Action on Normal Subjects.—Patients without edema or renal diseases and normal subjects respond to the injection of mercurial diuretics in a manner almost

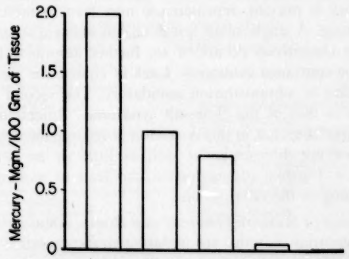


Fig. 7.—Distribution of mercury in various tissues. The patient died within 15 minutes after the injection of mercurophylline, probably as the result of the circulatory action of theophylline. Note that there was little mercury in the kidneys.

exactly similar to those with edema, except that the total diuresis is apt to be less. In addition, renal plasma flow may diminish moderately, a reflection of the relative dehydration induced by the drug.[10] As might be expected, glomerular filtration rate may increase slightly after use of compounds containing theophylline, an action which is consistent with that of the xanthine diuretics. Generally, when normal persons are receiving diets unrestricted as to salt, the action of mercurial diuretics may be difficult to demonstrate; on low salt intakes the effects on urinary chlorides are readily seen.

Distribution of Mercury after Injection.—Mercury is found mainly in the liver, heart muscle, and lungs, with only traces in the kidneys, during the first 15 minutes after injection into man, suggesting storage in depots other than the kidney with gradual release. Two sudden deaths attributable to the action of the associated theophylline occurred; in both, the distribution of mercury was similar (Fig. 7). No observations have come to our attention regarding the distribution several hours after injection.

Indications.—Mercurial diuretics are indicated whenever therapy is directed toward removing excessive salt from the body. Usually the salt is dissolved in water at or near osmotic electrolyte equilibrium; the excretion of salt stimulates removal of water by osmostic tubular diuresis. Therefore, when edema fluid is accompanied with relatively normal values of plasma sodium and chloride, and the renal tubules are in a state healthy enough to reabsorb large or excessive amounts of sodium chloride, the mercurial diuretics will probably act. Congestive circulatory failure is the condition of choice for the use of these substances. On the other hand, when the edema is extrarenal in origin (reduced plasma osmotic pressure from low serum albumin), or due to insufficient filtration (renal disease with uremia), the mercurial diuretics may have little effect. When active, these drugs can lead to favorable results whether the edema is peripheral or pulmonary; paroxysmal nocturnal dyspnea is often improved by mercurial diuresis and low dietary salt.

Contraindications.—The mercurial diuretics are contraindicated in two general conditions. When renal disease of such a nature as to prevent the elimination of mercury is present, repeated use may lead to mercury poisoning. A single small test dose can indicate whether or not chloruresis occurs; if so, further administration may be continued cautiously. Lack of chloruresis makes cessation of administration mandatory. The second situation is that of the "low-salt syndrome." Injection of mercurial diuretics in this condition is accompanied with little or no chloruresis, as well as little or no water diuresis. Further administration can lead to mercurial poisoning of the renal tubules.

Choice of Mercurial Diuretic and Route.—Since all of the mercurial diuretics are irritating to the tissues, subcutaneous injection is accompanied with varying degrees of tissue necrosis and inflammation. The least irritating is mercaptomerin (thiomerin*) sodium, which can be given by this route. It causes mild to moderate local reactions (ecchymosis, tenderness, swelling, leading to subcutaneous nodules of fat necrosis) in 11 to 25% of patients.[12]

For the intramuscular route, the mercurial drugs containing chemically-bound theophylline and mercaptomerin sodium cause much less irritation than does mersalyl, a material which is locally quite toxic. Mersalyl also can cause thrombosis of the vein into which it is injected, unless previously diluted with 10 ml. of isotonic saline solution and given slowly; venous thrombosis occurs but rarely when this precaution is taken.

For intravenous injection, mersalyl and mercaptomerin sodium are by far the preparations of choice; both avoid the acute circulatory action of theophylline. It is being gradually realized that sudden death following injection of mercurial diuretics may be due not to the small amount of mercury in the preparations (40 mg. per milliliter) but to the action of theophylline. The cardiotoxic action of mercury occurs only after very large doses. Drugs containing either bound (mercurophylline meralluride) or free (mersalyl-theophylline) theophylline should therefore either be avoided or be given very slowly by the intravenous route, especially when ventricular ectopic beats are present in a markedly damaged myocardium. Many preparations may be given either by mouth or by rectum; they are less effective in general.

Rapid protracted diuresis of large volumes of edema by mercurial (or other) diuretics is to be avoided. Clinical observation sugests that thromboses in peripheral or cardiac vessels can occur when treatment is vigorous and weight loss excessive in a short period of time. Reduction of an expanded blood volume must be accompanied with either destruction or concentration of plasma proteins and red blood cells. Although unsupported by experimental evidence, major or minor thrombotic episodes have been seen and attributed to too rapid diuresis.

DIGITALIS

The various glucosides of digitalis act as diuretic agents only when the edema is the result of myocardial insufficiency, and the function of the myocardium can be improved by the use of these drugs. Heart disease with congestive failure per se is therefore no direct indication for digitalis. Mechanical limitation of cardiac input—as in tricuspid stenosis, vena caval obstruction, or constrictive pericarditis—which leads to circulatory congestion is little benefited by digitalis, and may actually become worse, owing to the smaller diastolic heart size induced by the agents. Similarly, in mitral stenosis unaccompanied with myocardial dilatation the circulation may not be improved. The primary action of digitalis is on the myocardium, increasing its "tone" and decreasing its diastolic size, lengthening its refractory period, and, of most importance, increasing the force of systole. The result is an increase in cardiac output. Only when the conditions in the myocardium are such that these effects can take place, is digitalis a diuretic drug. The slower rate induced in auricular fibrillation results in addition to increased systolic output. It is doubtful that the direct action of digitalis upon the renal vessels contributes appreciably to the diuresis. Aside from auricular fibrillation, the usual conditions which best respond to digitalis therapy are those accompanied with myocardial dilatation; i. e., in hypertensive and arteriosclerotic heart disease with a myocardium which has enough reserve to respond. Congestion, either peripheral or pulmonary, caused by valvular diseases is responsive only when the predominant alteration is in the myocardium. Congestion caused by mechanical factors does not improve. In heart block with failure the effects are variable, but sometimes are adverse owing to the decrease in diastolic filling induced by digitalis.

When digitalis induces diuresis, both water and chlorides are excreted (Fig. 8). There appears to be no selective action upon one or the other, as would be expected, and the results are explicable on the basis of an improvement in cardiac output and renal circulation. When the latter is markedly impaired as in terminal hypertensive disease, digitalis may fail to cause diuresis.

12. Stewart, H. J.; McCoy, H. I.; Shephard, E. M., and Luckey, E. H.: Experience with Thiomerin, a New Mercurial Diuretic, Circulation **1**: 502, 1950. Modell, W.; Gold, H.; Kwit, N.; Warshaw, L.; Otto, H., and Zahm, W.: Incidence of Local Reactions to Mercuhydrin and Thiomerin by Subcutaneous Injection in Patients with Congestive Failure, Federation Proc. **9**: 302, 1950.

V 14
1951

The action on left ventricular failure is similar, pulmonary congestion being relieved and diuresis established by direct myocardial action.

The selective action of digitalis on congestive failure due to certain types of heart disease is illustrated by a series of 20 cases critically studied after long control

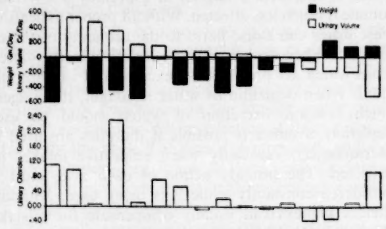


Fig. 8.—The effect of digitalis on weight, urinary output, and chlorides. The open bars indicate the average daily change in urinary output after digitalization as compared with the average output during a control period of equal length. The solid bars indicate the average daily gain (above the line) or loss (below the line) in weight compared with similar calculations of the control periods. In a similar manner, the change in the daily urinary excretion of chlorides is shown. All patients suffered from severe congestive failure of the "right-sided" type.

periods.[7] Of 11 with arteriosclerotic heart disease, five of six with normal sinus rhythm, and two of five with auricular fibrillation and a slow ventricular rate improved. Of eight with rheumatic heart disease, three with auricular fibrillation and a rapid ventricular rate improved, and five with normal sinus rhythm did not. Of six with hypertensive heart disease and normal rhythm, five improved and one with renal insufficiency did not. All suffered from severe congestive failure with massive edema.

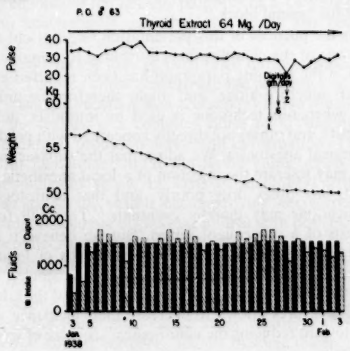


Fig. 9.—The diuretic effects of thyroid extract in a patient with complete heart block (also shown in Fig. 1). Although uncontrolled, it would appear that the urinary excretion of water exceeded the intake on almost every day. The administration of digitalis caused a fall of pulse rate, severe symptoms, and some depression of urinary volume.

THYROID AND PARATHYROID EXTRACT

Under some conditions, thyroid extract can act as a diuretic, in a manner probably similar to the production of polyuria by hyperthyroidism. The exact mechanism is not known; calcium excretion is increased. Its use in congestive failure is confined to cases of complete heart block (Fig. 9). Parathyroid extract apparently acts as a diuretic by stimulating the renal excretion of phosphate and calcium. The mode of action is not understood.

GENERAL INDICATIONS FOR DIURETICS

Edema is always accompanied with the renal retention of salt and water, unless it is of such minor degree as to be clinically unimportant. The indications for removing edema fluid depend on its cause. The state of the circulating blood volume is of paramount importance in any decision involving the use of strong chemical substances which cause loss of fluid or salt (Table 4).

Edema due to increased capillary blood pressure (increased venous pressure) in a localized area can be controlled by low salt intake and diuretic drugs, but the danger of causing hypovolemia is always present. If the

TABLE 4.—*General Types of Edema and Diuretic Measure Indicated*

Edema Due to	Diuretic Measure
Increased capillary blood pressure (Increased venous pressure)	Mobilization of edema fluid
Local venous obstruction	Osmotic diuretics
Increased capillary permeability	None (counterpressure)
Burns, trauma	
Decreased osmotic pressure of plasma	Serum albumin
Hypoproteinemia (nephrotic syndrome, starvation)	Acacia ?
	Osmotic diuretics ?
Decreased tissue pressure	
Aging	None (counterpressure)
Previous massive edema	
Lymph stasis	Mobilization of edema fluid
Primary renal retention of salt	Restriction of salt
Cushing's syndrome	Restoration of electrolyte balance (water)
Renal insufficiency	Mercurials unless renal disease is present and severe
Primary renal retention of water	Restriction of water
Renal insufficiency	Restoration of electrolyte balance (salt)
Low salt syndrome	Osmotic diuretics
Lower nephron syndrome, etc.	Alcohol ?
Special types with multiple factors	
Portal venous obstruction	Mercurials and osmotic diuretics
Pregnancy	Mercurials and osmotic diuretics
Beri-beri	Mercurials and xanthines
Congestive circulatory failure	Mercurials and xanthines
	Osmotic diuretics
Renal disease	Osmotic diuretics if no renal insufficiency
	Restoration of disturbed electrolyte balance

balance between the factors promoting the edema is overweighed by the efficacy of the diuretic drug, relatively little serious loss of blood volume and hemoconcentration will result. The contrary, however, can be true. The same statements apply to lymphatic stasis.

Edema due to increased capillary permeability resulting from traumatic or toxic agents cannot be controlled by diuretic drugs without serious loss of blood volume. Removal of extracellular fluids by renal routes causes relative losses in untraumatized areas.

Edema due to decreased plasma oncotic pressure (hypoproteinemia) is best controlled by raising the oncotic pressure. The overuse of diuretic drugs if effective in this condition can serve only to deplete blood volume and cause circulatory changes, unless hemoconcentration with higher oncotic pressure is induced.

Edema due to decreased tissue pressure is affected by diuretics, but is better controlled by mechanical means for raising tissue pressure. Since it usually occurs in the legs and is minimal unless other factors are operating, diuretic drugs are not indicated.

Edema due to primary renal retention of salt is of two types: one in which kidneys are normal but are acted on by extrarenal hormonal influences, and the other in which kidneys are diseased and cannot excrete salt. Diuretic drugs acting on tubular salt reabsorption can affect the first type, but are usually valueless in the second. The same general statement holds true concerning edema due to renal retention of water.

Edema due to multiple causes, in which diuresis is oftenest indicated, responds to diuretic drugs in variable fashion depending on the factor bearing the greatest influence upon the development of edema. In renal diseases the response may be poor, owing to the nature of the pathological process. In cardiac diseases the response is usually excellent, many types of diuretics causing excretion of salt and water; increased blood volume may be restored to normal. In portal venous obstruction the response varies from good to poor, and depends largely on the balance of the edema-promoting obstruction, the hypoproteinemia, and the renal ability to excrete salt. In pregnancy, when overactivity of some of the steroid hormones may be concerned, on theoretical grounds mercurial drugs are to be preferred.

It should be emphasized that edema per se is not an indication for the use of diuretics. Only certain types suggest this procedure. Edema associated with a high blood volume usually responds when kidneys are adequate; edema with a normal or especially a low blood volume is much less affected. Without proper indications, these drugs can cause harm to the economy of the circulation. When depletion of salt is desirable, the diuretic drugs which act primarily on excretion of salt are indicated. When depletion of water is sought, those agents which promote excretion of water should be used. Depletion of either is possible if diuretics are used indiscriminately, especially when respective intakes are restricted. The primary action of each drug must be considered constantly while it is being used. Although efficient kidneys can usually compensate for mistakes which induce electrolyte imbalances, diseased kidneys often cannot; and the kidneys, in edematous states, are often anatomically or functionally disturbed.

600 Kingshighway Blvd.

HAZARDS OF LUMBAR PUNCTURE

Robert D. Dripps, M.D.
and
Leroy D. Vandam, M.D., Philadelphia

V 14
1951

One of the controversial subjects in anesthesia has been that of the incidence and specificity of neurological sequelae attributable to spinal anesthesia.[1] Various complications are cited by opponents of the method. These include headache, diplopia, backache, paresthesias in the legs, paralysis or weakness of muscles, usually in the legs, and infection either localized or diffuse in the form of meningitis. Beginning in 1948, a serious attempt was made to follow each patient who received spinal anesthesia at the Hospital of the University of Pennsylvania, not only in the immediate postoperative period but also for periods of six months to a year afterwards. To date, 90% of some 6,000 patients have been successfully contacted in this fashion. Our experience suggests that attention to details of technique will result in a much lower incidence of neurological sequelae than is suggested in the reports cited.

The technique of spinal anesthesia can be said to have two components: lumbar puncture, and the introduction of an anesthetic into the subarachnoid space. Lumbar puncture, an accepted clinical procedure, is often employed without much thought by physicians relatively unskilled with the method for such purposes as examination of the cerebrospinal fluid, for "spinal drainage," for the introduction of drugs, air, or radiopaque material, or to test for "spinal block."

It is the purpose of this presentation to point out that every one of the complications attributed to spinal anesthesia in the opening paragraph has been reported after lumbar puncture alone, and might therefore be anticipated when this technique is used by internists, dermatologists, and others not directly concerned with producing surgical anesthesia. We admit that the subarachnoid space may tolerate the injection of a local anesthetic or, indeed, any other drug poorly, and that neurological complications may thereby eventuate.[2] This will form the basis of a subsequent report. But we believe it appropriate to emphasize some of the hazards of lumbar puncture itself since these are less frequently singled out for criticism. Recognition of these hazards and the adoption of measures known to decrease their incidence will go far toward reducing the neurological sequelae of spinal anesthesia.

The major causes of difficulty following lumbar puncture result from three factors: trauma, changes in cerebrospinal fluid pressure, and infection.

TRAUMA

A number of structures must be pierced before the subarachnoid space can be reached with a needle. If a sharp, small-gauge needle is expertly introduced, trauma will be minimal. If a dull, large-bore needle is used, or if multiple explorations of the back are required, the extent

This study was supported in part by a grant from the Department of the Army, Office of the Surgeon General.

Read before the Section on Anesthesiology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 13, 1951.

From the Department of Anesthesiology, Hospital of the University of Pennsylvania, and the Harrison Department of Surgical Research, University of Pennsylvania School of Medicine.

1. Kennedy, F.; Effron, A. S., and Perry, G.: Grave Spinal Cord Paralysis Caused by Spinal Anesthesia, Surg., Gynec. & Obst. **91**: 385-398, 1950. Thorsen, G.: Neurological Complications After Spinal Anesthesia and Results from 2493 Follow-Up Cases, Acta chir. Scandinav. **95**: 1-272, 1947.

2. Wilson, G.; Rupp, C., and Wilson, W. W.: The Dangers of Intrathecal Medication, J. A. M. A. **140**: 1076-1079 (July 30) 1949.

and degree of injury are increased. The tissues which are inevitably punctured are the spinal ligaments and meninges. Those which may suffer in addition are the periosteum, annulus fibrosis of the intervertebral disk, perivertebral plexus of veins, spinal cord, nerve roots, and blood vessels which accompany the latter in the subarachnoid space. Significant sequelae may follow injury to any of these structures.

Backache may be caused by injuries to the spinal ligaments, periosteum, or annulus fibrosis. Experimental as well as clinical data exist to support this contention. If hypertonic saline solution is injected into muscles, ligaments, or periosteum in the lumbar region, a deep aching pain results.[3] When radiation of this pain occurs, it is to the low back. The pain is characteristic and reproducible. Presumably, injury to these deep structures by the lumbar puncture needle could reproduce conditions of the experiment, and lumbosacral pain might result.

The needle may pass beyond the subarachnoid space and damage the annulus fibrosis. The disk must be regarded as pain sensitive on the basis of two observations. Lindblom [4] has injected iodopyracet (diodrast®) into the nucleus pulposus of the intervertebral disk and observed low back pain as the needle passed inward. Wiberg,[5] during operations on the lumbar spine performed under local anesthesia, has pressed on the disk externally and produced pain referred to the lumbosacral area. Histological evidence of sensory innervation indicates that it is in all probability the ligamentous covering of the disk which is responsible for the pain. Irritation of or pressure against this covering might therefore cause low back pain. More extensive damage to the annulus fibrosis may be followed by herniation of the disk, a sequel of lumbar puncture reported by a number of workers.[6] We have seen gelatinous material drip from a needle which entered the nucleus pulposus of a 14-year-old girl who inadvertently moved as the needle was being advanced during lumbar puncture.

Blood vessels may be perforated during lumbar puncture. Those of most concern are the perivertebral plexus of veins and vessels which accompany nerve roots. Injury to the former is a common cause of a "bloody tap." Bleeding so produced may result in formation of an epidural hematoma, or, if the blood gains access to the subarachnoid space, in signs of meningeal irritation.[7] Damage to the vessels accompanying nerve roots may produce ischemia of these structures with possible subsequent neurologic signs and symptoms.

Nerve roots or rarely the spinal cord itself may be injured by the needle. Observation of 129 adult cadavers by Reimann and Anson [8] indicated that in 94% of specimens the spinal cord ended in the region of the first or second lumbar vertebral bodies. In some instances however, the cord terminated as low as the middle of the third lumbar vertebral body. It is obvious that lumbar puncture should be performed with great caution above the interspace between L_{3-4}. This is particularly true in infants or young children in whom the cord length more closely approximates that of the spinal canal.

Contact with the sensory roots of the cauda equina occurred in 13% of the lumbar punctures performed by us for spinal anesthesia. Evidence of such contact was the development of "electric shocks" or pain sensations radiating into the back, perineum, or legs. Contact with motor roots might not be as evident to the operator unless muscular contraction resulted. Obviously neurological sequelae do not occur with this frequency, but prolonged and occasionally permanent sensory or motor abnormalities may result from such direct trauma.

ALTERATION IN CEREBROSPINAL FLUID PRESSURE

Cerebrospinal fluid pressure must often be reduced after lumbar puncture because of loss of fluid through the puncture hole. An immediate reduction in pressure will result instantly in a characteristic headache if the patient is upright and if 18 to 20 cc. of fluid is withdrawn.[9] This immediate change in fluid dynamics may have other more serious consequences as well. It can disturb the fluid cushion or can cause vascular engorgement and edema of a spinal cord tumor so that latent signs and symptoms of such a lesion may become evident for the first time or existing difficulties may become intensified.[10] (We have seen one such instance in our series, a 42-year-old woman with no neurological signs or symptoms prior to spinal anesthesia, in whom progressive hypesthesia, ataxia, and loss of abdominal reflexes developed after operation. Removal of a spinal cord tumor was followed by significant recovery. This case will be reported in detail in another communication.) It can so disturb the fluid cushion of blood vessels, or it can be followed by such dilation of vessels, that diseased structures as in aneurysm or hypertension may rupture, causing serious subarachnoid hemorrhage.[11] A final point, recognized by many but relatively poorly documented experimentally, is herniation of the brain into the foramen magnum after performance of lumbar puncture in the presence of increased intracranial pressure.

More prolonged and persistent reductions in cerebrospinal fluid pressure appear to be related to the development of so-called postlumbar puncture headache, which may be accompanied with visual or aural disturbances. These sequelae will be considered in some detail. When should a headache be regarded as a postlumbar puncture headache? We have used the following

3. Kellgren, J. H.: On the Distribution of Pain Arising from Deep Somatic Structures with Charts of Segmental Pain Areas, Clin. Sc. **4**: 35-46, 1939.

4. Lindblom, K.: Diagnostic Puncture of Intervertebral Disks in Sciatica, Acta orthop. scandinav. **17**: 231-239, 1948.

5. Wiberg, G.: Back Pain in Relation to the Nerve Supply of the Intervertebral Disc, Acta orthop. scandinav. **19**: 211-221, 1949.

6. Epps, P. G.: A Case of Degeneration of the Intervertebral Disc Following Lumbar Puncture, Proc. Roy. Soc. Med. **35**: 220-221, 1942. Baker, A. H.: Lesion of the Intervertebral Disc Caused by Lumbar Puncture, Brit. J. Surg. **34**: 385-388, 1947. Gellman, M.: Injury to Intervertebral Discs During Spinal Puncture, J. Bone & Joint Surg. **22**: 980-985, 1940. Everett, A. D.: Lumbar Puncture Injuries, Proc. Roy. Soc. Med. **35**: 208-210, 1942.

7. Jackson, I. J.: Aseptic Hemogenic Meningitis: Experimental of Aseptic Meningeal Reactions due to Blood and Its Breakdown Products, Arch. Neurol. & Psychiat. **62**: 572-589 (Nov.) 1949.

8. Reimann, A. F., and Anson, B. J.: Vertebral Level of Termination of the Spinal Cord with Report of a Case of Sacral Cord, Anat. Rec. **88**: 127-138, 1944.

9. Kunkle, E. C.; Ray, B. S., and Wolff, H. G.: Experimental Studies on Headache: Analysis of Headache Associated with Changes in Intracranial Pressure, Arch. Neurol. & Psychiat. **49**: 323-358 (March) 1943.

10. Eaton, L. M., and Craig, W. M.: Tumor of the Spinal Cord: Sudden Paralysis Following Lumbar Puncture, Proc. Staff Meet., Mayo Clin. **15**: 170-172, 1940.

11. Schube, P. G., and Raskin, N.: Cerebral Hemorrhages Following Lumbar Spinal Puncture, J. Nerv. & Ment. Dis. **84**: 636-659, 1936. Cooke, J. V.: Hemorrhage into the Cauda Equina Following Lumbar Puncture, Proc. Path. Soc. **14**: 104, 1911. Hammes, E. M.: Hemorrhage in the Cauda Secondary to Lumbar Puncture, Arch. Neurol. & Psychiat. **3**: 595 (Feb.) 1920.

clinical criteria. The patient usually recognizes that the headache of which he complains is different from any previously experienced. Discomfort is brought on or made a great deal worse by assumption of the erect position; headache usually can be relieved by abdominal compression; pain may be localized only behind the eyeballs, across the entire frontal area, or it may be occipitonuchal in distribution. In the latter circumstances, a "stiff neck" is often present. Dizziness, difficulties in focusing the eyes and in hearing, and nausea and vomiting may accompany the headache. Certain aspects of this clinical picture deserve emphasis. The onset of the headache may be delayed as long as 7 to 10 days following puncture, perhaps even longer. With early discharge from the hospital and poor follow-up, many headaches are not discovered. The duration of headache may be prolonged—occasionally for weeks and months. Significant disability may result thereby. The nuchal component is frequently overlooked, and if a patient merely complains of neck pain, shoulder pain, or stiff neck, lumbar puncture often escapes implication.

The mechanisms of head pain have been carefully studied by Wolff and colleagues.[12] According to their observations the following intracranial structures are sensitive to pain: the venous sinuses and their venous tributaries; parts of the dura at the base of the brain; the dural arteries; and the cerebral arteries at the base of the brain. The current theory of the causation of lumbar puncture headache involves the concept of loss of cerebrospinal fluid followed by traction on, or displacement and distention of, the intracranial structures just described.

Evidence that a reduction in volume of cerebrospinal fluid is a causative factor in the production of headache includes the following observations:

1. A headache which appears to be identical to so-called "spinal" headache can be produced in man in the upright position by withdrawal of fluid and can be abolished by restoration of this fluid.[9]

2. In many patients with postlumbar puncture headache a second puncture will reveal either low pressures or pressures approximately zero.[13]

3. Transient relief of postlumbar puncture headache can be obtained by the subarachnoid injection of fluid (pressure increased from within), or by epidural injection of fluid or compression of the abdominal cavity (pressure increased from without).[14]

Specific clinical observations can be explained on the basis of leakage of fluid, and can thus be regarded as indirect evidence in support of the concept. For example, the incidence of headache is reduced by use of small-gauge needles, (less fluid loss through smaller opening, or more ready closure of the smaller opening). The increased incidence of headache after vomiting or straining, as in vaginal deliveries, can be related to greater loss of cerebrospinal fluid incident to the increased pressure which accompanies such efforts.

There are studies which at first glance appear to deny a relationship between headache and lowered cerebrospinal fluid pressure. Marshall [13a] measured cerebrospinal fluid pressure in 43 patients at the time of lumbar puncture and 24 hours later at the time of a second puncture. Of the six patients in whom typical headache developed after the first puncture, only three had low pressures at the time of the second examination. There were also six patients with low pressure at the time of the second measurement who had no headache.

It seems to us that these observations can be explained on the following basis: downward movement or swelling of the brain after drainage of cerebrospinal fluid can hardly be expected to occur identically in all instances. Should supporting structures prevent a "sag" or should there be certain positions in which less traction is exerted on pain-sensitive structures than others, there would not be a direct relationship between the degree of pressure change and the incidence of headache. A second explanation has been advanced by Marshall, namely, individual variations in the sensitivity of intracranial tissues to pain. There is a numerical reduction in the number of pain fibers to an area with age. Age also brings with it a reduction in elasticity of blood vessels.

The leakage theory of headache is not accepted by all. There are those who attribute this complication to an increase in cerebrospinal fluid pressure, presumably the result of a meningeal irritative reaction. The "stiff neck" is frequently attributed to such a response. There is no doubt that in relatively rare instances an aseptic meningitis may follow lumbar puncture. In these circumstances pressure is elevated and there is a definite outpouring of cells. A more reasonable explanation and counterpart for the "stiff neck" is to be found in the theories of referred pain and muscle spasm resulting from visceral stimulation. Just as abdominal visceral disease is reflected in pain and spasm of the abdominal musculature, so may traction on or dilation of such deep lying structures as blood vessels and dura at the base of the brain be referred via the cervical cord to the neck muscles with resulting pain and spasm.

Why does not everyone subjected to lumbar puncture respond with a headache? To summarize the foregoing discussion three possibilities come to mind:

1. Relative insensitivity to pain.

2. Downward displacement or swelling of the brain in such fashion as to spare pain sensitive structures.

3. Prompt sealing of the dural opening either by fibrinous plug, or by prolapse of the arachnoid. Histological evidence of the formation of a fibrinous coagulum has been offered by Ingvar [15] and others.[16]

Visual disturbances have been noted after lumbar puncture. These include blurring of vision, difficulty in focusing, and diplopia.[17] To prove that these are related to alterations of cerebrospinal fluid dynamics is not easy; but there are observations which support such a contention. One of the more distressing ocular sequelae of

12. Wolff, H. G.: Headache and Other Pain, New York, Oxford University Press, 1948.

13. (*a*) Marshall, J.: Lumbar-Puncture Headache, J. Neurol., Neurosurg. & Psychiat. **13**: 71-74, 1950. (*b*) Pickering, G. W.; Lumbar Puncture Headache, Brain **71**: 274-280, 1948. (*c*) Glesne, O. G.: Lumbar Puncture Headaches, Anesthesiology **11**: 702-708, 1950.

14. Pickering.[13b] Glesne.[13c] Rice, G. G., and Dabbs, C. H.: The Use of Peridural and Subarachnoid Injections of Saline Solution in the Treatment of Severe Postspinal Headache, Anesthesiology **11**: 17-23, 1950. Ahearn, R. E.: Management of Severe Postlumbar Puncture Headache, New York J. Med. **48**: 1495-1498, 1948. Weintraub, F.; Antine, W., and Raphael, A. J.: Postpartum Headache After Low Spinal Anesthesia in Vaginal Delivery and Its Treatment, Am. J. Obst. & Gynec. **54**: 682-686, 1947.

15. Ingvar, S.: Danger of Leakage of the Cerebrospinal Fluid After Lumbar Puncture, Acta med. Scandinav. **58**: 67-101, 1923.

16. Frankson, C., and Gordh, T.: Headache After Spinal Anesthesia and a Technique for Lessening Its Frequency, Acta chir. scandinav. **94**: 443-454, 1946.

V 14
1951

lumbar puncture is diplopia caused by paralysis of one of the external recti of the eye. The abducens nerve passes over the petrosal ridge of the temporal bone and would appear to be susceptible to damage by stretch or pressure. Two facts are of interest. First, in the majority of instances diplopia is preceded by a postlumbar puncture headache. Second, the incidence of diplopia is significantly greater when a larger gauge needle is used. A 16-gauge needle was used in 637 of the 6,147 patients in our series. A typical postlumbar puncture headache resulted in 22% of these patients, five of whom had diplopia. These were the only instances of external rectus palsy in the entire group. All made successful recoveries in from three weeks to nine months. It is difficult to reconcile these data with the nebulous "toxic" theory of abducens nerve injury advanced by some.

Similarly altered cerebrospinal fluid dynamics may explain the tinnitus, decrease in hearing, or "blocking of the ears" observed in 1% of our patients. The anatomic connection between the cochlea and the subarachnoid space is established.[18] If india ink be injected into the cerebrospinal fluid of dogs or cats, discoloration of the perilymph of the labyrinth is noted within 15 minutes. Hughson [18] has demonstrated that with reduction in cerebrospinal fluid pressure, there is a subsequent decrease in intralabyrinthine pressure associated with impairment of hearing for high tones. The change produced in the ability of the ear to transmit high tones may be sufficient to block all appreciation of such tones. In a patient recently seen by us with a severe postlumbar puncture headache and diminution in hearing, both the headache and the hearing improved significantly after injection of fluid into the subarachnoid space.

INFECTION

Infections may follow lumbar puncture for two reasons: first failure to use an aseptic technique, or second, traumatic production of a locus minoris resistentiae in the presence of general bodily infection, with subsequent localization at the site of injury. Meningitis [19] and infected intervertebral disk [20] may result from the first error. Epidural abscess or osteomyelitis may occur following the second.[21]

A dramatic illustration of the thesis which we have been trying to develop in this paper comes from the British pathologist Dickson,[22] who states, "In the centrifugalized deposits of lumbar-puncture specimens, I have not infrequently encountered squamous cells from the skin-surface, together with their accompanying staphylococci, etc., and occasionally even a little cylindrical fragment of skin punched out by the exploring needle." Dickson also reports myelocytes and nucleated red blood cells, presumably from injury to bone marrow. Finally, he has observed cartilage cells from the intervertebral disk.

CONCLUSIONS

On the basis of these considerations, we believe two conclusions to be justified: first, every effort should be made to minimize the local trauma of lumbar puncture, and to practice scrupulous asepsis; second, physicians analyzing sequelae of spinal anesthesia should attempt to determine which complications are related to the lumbar puncture and which to the introduction of the anesthetic solution. Lumbar puncture, if improperly performed, may be followed by a significant morbidity.

3400 Spruce St. (Dr. Dripps).

17. Robinson, H. M., Jr.: Abducens Palsy (with Subsequent Recovery) Following Lumbar Puncture, Am. J. Syph. **29**: 422-423, 1945. Dattner, B., and Thomas, E. W.: Bilateral Abducens Palsy Following Lumbar Puncture, N. Y. J. Med. **41**: 1660-1662, 1941. Peter, L. C.: The Extra-Ocular Muscles: A Clinical Study of Normal and Abnormal Ocular Motility, Ed. 3, Philadelphia, Lea & Febiger, 1941, p. 279.

18. Hughson, W.: A Note on the Relationship of Cerebrospinal and Intralabyrinthine Pressures, Am. J. Physiol. **101**: 396-407, 1932.

19. Keefer, C. S.: Bacterial Meningitis Following Lumbar Puncture and Spinal Anesthesia, Am. Pract. & Digest Treat. **1**: 679-682, 1950. Reynolds, K. E., and Wilson, G.: Aseptic Meningitis Following Diagnostic Lumbar Puncture: Indications for Lumbar Puncture and Complications Secondary to It, J. A. M. A. **102**: 1460-1462 (May 5) 1934. Rangell, L., and Glassman, F.: Acute Spinal Epidural Abscess as a Complication of Lumbar Puncture, J. Nerv. & Ment. Dis. **102**: 8-18, 1945.

20. Bromley, L. L.; Craig, J. D., and Kessel, A. W. L.: Infected Intervertebral Disk After Lumbar Puncture, Brit. M. J. **1**: 132-133, 1949.

21. Remsen, D. B.: The Rôle of Lumbar Puncture in the Causation of Meningitis, J. Med. **17**: 115-118, 1936. Findlay, L., and Kemp, F. H.: Osteomyelitis of the Spine Following Lumbar Puncture, Arch. Dis. Childhood **18**: 102-105, 1943.

22. Dickson, W. E. C.: The Cerebro-Spinal Fluid in Meningitis, Post Grad. M. J. **20**: 69-74, 1944.

SURGICAL CORRECTION OF LYMPHEDEMA

WITH OBSERVATIONS ON USE OF ELECTRIC DERMATOME

Gerald H. Pratt, M.D., New York

Lymphedema has been defined as a "progressive histopathologic state characterized by a chronic inflammatory fibromatosis or hypertrophy of the hypodermal and dermal connective tissue" (Matas [1]), or as "a massive overgrowth involving the fibro-connective tissue of the skin, subcutaneous tissue; blood and lymph vessels; with associated muscular degeneration and atrophy affecting the leg (elephant leg), scrotum (lymph scrotum), labia (lymph labia)" (Babcock [2]). The term "elephantiasis" apparently arose during the Roman army's campaign in Libia (Allen, Barker and Hines [3]), when natives were captured who had these tremendous swellings of either the leg or scrotum in which not only the size of the part but the contour of the skin reminded the legions' observers of the hide of elephants. Lymphedema may be considered medically as an obstruction or blockage in the lymphatic system that prevents the adequate absorption or return of the lymph fluid—more specifically, in this instance, from the extremities. The lymph vessels in the

From the Vascular Clinic of Saint Vincent's Hospital and the New York University College of Medicine.

1. Matas, R.: The Surgical Treatment of Elephantiasis and Elephantoid States Dependent Upon Chronic Obstruction of the Lymphatic and Venous Channels, Am. J. Trop. Dis. & Prev. Med. **1**: 60, 1913.

2. Babcock, W., and others: Principles and Practice of Surgery, Philadelphia, Lea & Febiger, 1944, p. 502.

3. Allen, E. V.; Barker, N. W., and Hines, E. A., Jr.: Peripheral Vascular Diseases, Philadelphia, W. B. Saunders Company, 1946.

skin and subcutaneous tissues are affected, and, secondarily, there is a distinct increase in the venous components to aid venous drainage, this system thus acting as a corollary to the lymphatic system. This block may be mechanical, resulting from scars, or it may follow fibrosis of the lymph channels after a bacterial or filarial invasion. Massive venous thrombosis may cause secondary lymph obstruction, as in so-called "milk leg." Malignant infiltration of the lymph glands or channels may be the cause. In other cases the block cause is unknown, and the lymph obstruction occurs at about puberty, being familial or congenital or both in type (Milroy's disease). Regardless of the cause, the extent of the lymphedema depends on the site, degree and length of involvement of the lymphatics, and the number of the secondary recurrent inflammatory processes to which the patients become subject. The part becomes tremendously enlarged, and the skin pores are dilated and assume a pigskin or elephant-like appearance. The local circulation to the part becomes impaired, there is a pigmentation deposit, edema, and, frequently, ulcerations. When the extremity is raised the edema recedes, the drainage taking place through subcutaneous spaces to adjoining areas, i. e., the abdomen, where there is no lymphatic obstruction. On dependency the fluid reaccumulates. Many of these patients become completely disabled.

ANATOMY [4]

Lymphatic circulation is a defensive system. This system is composed of lymph fluid, lymph vessels, and lymph glands. Lymph is a clear, transparent, waterlike fluid with a specific gravity of approximately 1.015 and is composed of leukocytes and lymphocytes. This discussion is not concerned with the part played by the lymphatic system in draining the bowel through the cisterna chyli and into the thoracic duct. The vessels begin as capillaries, and these lead to connecting vessels that carry the lymph to larger vessels and ultimately to the thoracic duct in the neck, where the lymph enters the venous blood system. The lymph system is a closed one, consisting of vessels lined by endothelium, a smooth muscle layer, and the external coat, which is principally connective tissue with some smooth muscle in it. It is supplied with nutriments through the outer and middle coats. The lymph vessels are in two layers, the superficial and deep systems; the superficial vessels are located in and under the surface of the skin and drain the skin as they pass through the subcutaneous tissue, with their corollary veins as perforators, to join the deeper lymphatic system. The deep lymph vessels have valves similar to those in veins, although they are placed much closer together than the valves in veins. The lymph vessels near the surface, however, are deficient in valves. Lymph vessels accompany deep veins.

ETIOLOGY

The causes of lymphedema have been divided into eight classifications (Pratt [4b]).

Primary or Specific Lymphedema.—Primary lymphedema is caused by specific invasion of the lymph vessels by the filarial worm Wuchereria bancrofti or by such microorganisms as Mycobacterium tuberculosis or Treponema pallidum. Primary lymphedema was of military importance in the Pacific area during World War II. In 1943, for example, 5,646 marines and sailors had to be evacuated because they were affected with this lesion, but after rigid quarantine from the natives only 743 were infected in 1944.[5]

Secondary or Infectious Lymphedema.—Lymph stasis may be caused by secondary inflammatory invasion of the lymphatic system by nonspecific organisms, such as the streptococci, fungi, and other organisms. Fibrosis and scarring occur secondarily.

Traumatic Lymphedema.—Injury with scarring or lymph stasis following an operation, keloids, burns, roentgen rays, radium, or radioactive isotopes may cause lymph collections.

Congenital Lymph Collections.—These may be the result of cystic hygroma, and possibly Milroy's disease [6] fits in this category.

Allergic Lymphedema.—In the allergic patient exposure to cold, to drugs, change of environment, or to exposure to other precipitants to which the patient may be sensitive may cause lymphedema.

Malignant Lymphedema.—Infiltration of the lymphatic system by malignant growth will cause lymphedema. All surgeons are aware of lymphedema occurring in an arm after radical breast resection. Usually this is caused by recurrent malignancies, and the proof in such instances is that they are not caused by metastatic node involvement.

Post Venous Thrombosis Lymphedema.—This lymph collection comes after massive closure of veins and is very common. It is one of the elements of "milk leg," since if there are vein blocks more work is given the lymph system. Much has been learned recently about the management of this condition.[7]

Idiopathic or Essential Lymphedema.—Some lymphedemas are of unknown origin, for example, Milroy's disease. Idiopathic or essential lymphedema as described first by Milroy [8] is an interesting but still little known lesion. Why these patients are healthy until puberty, when the obstruction appears, is not clear. This indicates an endocrine cause. That there is some congenital defect in the anatomic and physiological mechanism of these patients is shown by familial tendency.

TREATMENT

The obvious treatment is to correct the underlying cause whenever possible. Contact with those infected with Filaria, for example, must be broken in that type.

4. (*a*) Ghormley, R. K., and Overton, L. M.: The Surgical Treatment of Severe Forms of Lymphedema (Elephantiasis) of the Extremities: A Study of the End-Results, Surg., Gynec. & Obst. **61**: 83, 1935. (*b*) Pratt, G. H.: Surgical Management of Vascular Diseases, Philadelphia, Lea & Febiger, 1949. (*c*) Gray, H.: Anatomy of the Human Body, ed. 25, edited by C. M. Goss, Philadelphia, Lea & Febiger, 1948.

5. Official figures were supplied by Captain R. L. Ware, Director, Medical Statistics Division, Bureau of Medicine and Surgery, U. S. Navy. Case incidence (includes A, ACD, EPTE, and AD; rates are computed on an annual basis per 100,000 average strength) and rates for Pacific area noncontinental United States Navy and Marine Corps, NAVMED-Fa-Card, Individual Statistical Report of Patient.

6. Milroy, W. F.: Chronic Hereditary Edema: Milroy's Disease, J. A. M. A. **91**: 1172 (Oct. 20) 1928.

7. (*a*) Pratt, G. H.: Surgical Management of Thrombosis and Thrombophlebitis, with Discussion of Vein Resection, New York State J. Med. **46**: 1825, 1946; (*b*) Surgical Management of Venous Clotting, S. Clin. North America **28**:341, 1948; (*c*) Surgical Management of the Post-Thrombotic Syndrome, Am. J. Surg. **81**: 562, 1951.

8. Milroy, W. F.: An Undescribed Variety of Hereditary Oedema, New York M. J. **56**: 505, 1892.

V 147
1951

Allergists may be of aid in treating patients who have allergic lymphedema. Antibiotic therapy may be of great help. Plastic excision and correction of obstructions, burns, or scars may be necessary. In addition to these fundamental measures that may be taken once the obstruction has developed, other aids to its correction exist.

Conservative Therapy.—Simple medical support frequently will cure mild lymphedema. In this treatment the affected part must be elevated sufficiently to reduce the swelling and adequately supported when the extremity is in a dependent position. These two measures are important.[4b] Elevation of the extremity means that the part should always be raised at night and each time swelling occurs during the day. At first this may require 10 or 12 periods of elevation a day. The lymph fluid must not be permitted to remain in the subcutaneous tissues for more than a short time, because if it does fibrosis will occur, and a subcutaneous tissue space will form in which fluid can collect. The term "adequate support" needs clarification. The support must be sufficient to maintain the decompression once the elevation has eliminated the fluid. If swelling, as shown by symptoms of fullness, tightness, pressure, or pain, occurs, even with adequate support, the part must be elevated again until the symptoms caused by that swelling subside. Raising the part above the heart level for a short time (30 min.) usually is sufficient to reduce the swelling. An Ace® bandage or rubber bandage is much better than a fitted elastic stocking at this stage, because the elastic or rubber bandage can be adjusted during the day to take up any slack after the swelling has gone down. If a fitted elastic stocking is used swelling will always occur to fill the size of the stocking. If the space between the skin and the subcutaneous tissues is obliterated in this way for a sufficient length of time, scarring may occur and the space be closed permanently. In most patients with so-called milk leg a program such as this, if instituted early and followed through, will be effective. Local vasodilators help some of these patients. Mecholyl® (acetyl-beta-methylcholine) given by iontophoresis has helped many of the mild group. The other vasodilators have not been too effective. Warm packs, soaks, and baths may help. Mild massage from the distal to the proximal part will be of assistance if it is not traumatizing. This massage must be light, regular, and carefully done. Walking in a lake or ocean in water waist-deep is helpful, because the pressure of the water helps press or massage the fluid out of the tissues.

Since lymphedema patients are susceptible to infection and have irregular septic attacks, repeated courses of a specific antibiotic therapy may be necessary. This requires selection of the drug best suited to control the organism in each patient. By an analysis of the previous frequency of the attacks the drug can be administered prophylactically just before the fever should occur. Often when the attacks are prevented for a time they do not recur. This sepsis occurs as cellulitis or thrombophlebitis and often is diagnosed as erysipelas. After each attack there may be more residual and permanent lymphedema. In those patients who have a permanent lymphedema from a so-called post thrombotic syndrome warm packs and repeated lumbar sympathectic nerve blocks are indicated. In a few cases the sympatholytic and adrenolytic drugs may be of help.

Surgical Therapy.—Patients with a moderate type of chronic lymphedema and those with swelling after the thrombotic syndrome may respond well to surgical sympathectomy. This measure has been discussed elsewhere (Pratt [8a]). This discussion is confined to patients with massive lymphedema. These patients are physically and psychologically disabled by the size of their legs and require surgical correction of the residual lymph mass for physical comfort or rehabilitation. Surgical literature is replete with the efforts of the early surgeons to control this problem. There were, for example, Lisfranc's attempts at scarification [9] and Carnochan's [10] ligation of the external iliac and femoral arteries, while other somewhat bizarre attempts show the intense desire of the patient for relief and the surgeon to supply it. Handley [11] was the first who tried to drain the blocked lymph to areas where there was no lymphatic obstruction, his drains being subcutaneously placed silk threads. Lexer,[12] Walther,[13] Lanz,[14] Rosanow's,[15] and Oppel [16] are all familiar names in the attempts at surgical aid. Lexer suggested the possibility of removing the deep fascia, and Kondoléon,[17] whose name is associated with the classical operation, incised a window in the deep fascia and removed a section of the edematous subcutaneous tissue and fat, then replaced the skin on the muscle. Sistrunk,[18] Homans,[19] Ghormley,[4a] Matas,[1] and Macey [20] have all supplied valuable data on this problem.

My first report in 1939 [21] dealt with 12 modified Kondoleon operations, and the following year [21] eight more were added. No operations of this type were performed from 1942 to 1945 because of military service, but by 1949 a total of 26 more procedures of one kind or another for relief of lymphedema had been performed. Of this total of 46 operations, the results were classed as good in 36, fair in four, and unsatisfactory in the remaining six.[4b]

8a. Footnotes 4b and 7.

9. Lisfranc, quoted by Keysser: Zur Operativen Behandlung der Elephantiasis, Deutsche Ztschr. f. Chir. **203-204**: 356, 1927.

10. Carnochan, quoted by Matas, R.: The Surgical Treatment of Elephantiasis and Elephantoid States Dependent upon Chronic Obstruction of the Lymphatic and Venous Channels, Am. J. Trop. Dis. & Prev. Med. **1**: 60, 1913.

11. Handley, W. S.: Lymphangioplasty: A New Method for the Relief of the Brawny Arm of Breast-Cancer and for Similar Conditions of Lymphatic Edema, Lancet **1**: 784, 1908.

12. Lexer, quoted by Allen, E. V.; Barker, N. W., and Hines, E. A., Jr.: Peripheral Vascular Diseases, Philadelphia, W. B. Saunders Company, 1946.

13. Walther, C.: Note sur le traitment de l'éléphantiasis des membres par le drainage lymphatique à tubes perdus, Bull. Acad. de Méd. Paris **82**: 262, 1919.

14. Lanz: Eröffnung neuer Abfuhrwege bei Stauung in Bauch und unteren Extremitäten, Zentralbl. f. Chir. **38**: 153, 1911.

15. Rosanow, W. M.: Lymphangioplastik bei Elephantiasis, Arch. f. klin. Chir. **99**: 645, 1912.

16. Oppel, quoted by Rosanow, W. M.: Lymphangioplastik bei Elephantiasis, Arch. f. klin. Chir. **99**: 645, 1912.

17 Kondoléon, E.: Die Lymphableitung, als Heilmittel bei chronischen Oedemen nach Quetschung, Munchen. med. Wchnschr. **59**: 525, 1912.

18. Sistrunk, W. E.: Further Experiences with Kondoleon Operation for Elephantiasis, J. A. M. A. **71**: 800 (Sept. 7) 1918.

19. Homans, J.: Circulatory Diseases of the Extremities, New York, The Macmillan Company, 1939, p. 330.

20. Macey, H. B.: A Surgical Procedure for Lymphedema of the Extremities, J. Bone & Joint Surg. **30**: 339 (April) 1948.

21. Pratt, G. H.: Surgical Considerations in the Treatment of Chronic Lymphedema and of Varicose Veins, Bull. New York Acad. Med. **16**: 381, 1940.

The surgical principle in the treatment of lymphedema is twofold. It is, first, to remove the voluminous subcutaneous and lymph tissue and, second, to try to obtain drainage for the skin through new lymphatic channels. The lymph channels, particularly in the muscle, offer such a possibility, since the lymph pathological condition is in the superficial lymph channels above the deep muscles. Lymph obstruction does not appear to occur below the subcutaneous tissues, nor does it follow the perforator lymph branches into the deep lymph channels. Several surgical procedures have been described, and they will be reviewed briefly. A variation in the technique that recently has been adopted successfully will be discussed.

In addition to surgical sympathectomy, the following measures have been adopted.

Total Fascia Excision Procedure: This procedure was discussed in 1940 [21] and 1941 [22] by Wright and me. It is an extension and combination of other modified Kondoléon procedures and particularly of the Homans [19] operation. In this total operation a sufficient ellipse of skin is removed to over-correct the leg after its excision. The remaining skin of the leg is then undermined completely and carefully. The incision in the thigh is on the lateral aspect, and that in the calf is posteriorly placed. The purpose of placing the incision laterally in the thigh is to protect it from inevitable postoperation contamination by defecation or urination. The posterior calf incision permits complete denuding of the muscle. The tibial bone is placed subcutaneously anteriorly, and the fascia can be raised and excised from either side. The skin is raised from the subcutaneous tissue in the thigh until 80% to 100% of the thigh has been encircled, and the entire circumference of the leg is always so treated in the calf. The incision is then continued through the subcutaneous tissue, superficial fascia, lymph fat, and deep fascia, and this entire area is removed en bloc. This leaves only the skin and the denuded muscles. The skin is then approximated over the bared muscles with interrupted steel wire and is held against the muscle by pressure bandages. In this way it may be likened to an immense skin graft. The dressings are not disturbed for two weeks. This procedure has been used in 38 instances and has given good results in approximately 60% to 70% of the patients.

Free and Pedicle Grafting Procedures [4b]: It was evident very early that in total fascia excision some of the undermined skin would slough, and free grafts or pedicle grafts would be necessary to replace the lost skin. It was found that if the pedicle of the graft were placed above the blocked lymphatic area the skin seemed to heal much better, and there was less residual edema. The lymph drainage was obtained by skin continuity to unblocked lymphatic channels. This surgical procedure was difficult and lengthy and had to be done in stages but was frequently the only effective procedure.

Dermatome Grafts: In 1948 Macey [20] called attention to a variation in the technique in which the skin was removed by the Padgett dermatome, and then the subcutaneous and deep facia were excised and the skin replaced directly on the muscle. He believed that this modification saved time, was technically easier, and that the results were as good.

NEW TECHNIQUE

In 1949 Brown's [23] electric skin graft instrument appeared. With this instrument enormous skin grafts can be raised quickly, the length of these grafts varying only with the availability of tissue from which the skin can be removed. Other instruments are available now.

REPORT OF CASE

The patient, a 47-yr.-old man, had a tremendous lymphedema of the right leg (fig. 1). The circumferential measurements of this leg, taken at the six lobular areas on the anterior surface, were 106 cm., 99.5 cm., 104 cm., 101 cm., 83.5 cm., and 76.5 cm., as compared with those of the left leg, which were 71.4 cm., 61.5 cm., 52.5 cm., 40.2 cm., 38.6 cm., and 36.6 cm.

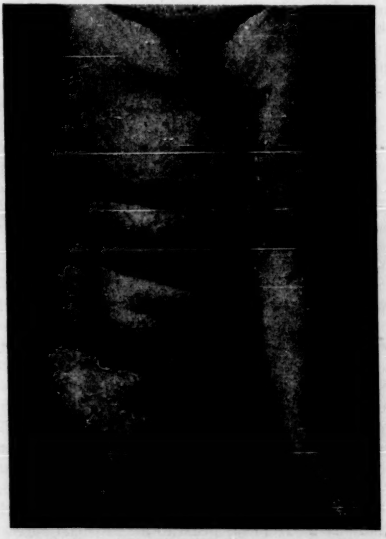


Fig. 1.—Massive lymphedema of 30 years' duration. Previous operation was ineffectual.

This lymphedema had been present 30 years. Some type of a modified Kondoléon procedure had been performed 10 years previously without benefit to the patient. The irregularity of the skin, the incisions made during the previous plastic operation, and the monstrous lobular appearance made any of the operations previously described technically impossible. In addition, the previous procedure had resulted in an infection, and as a result the lines of subcutaneous and fascial plane cleavage were no longer present. This patient was operated on in three stages as follows:

Operation Technique.—In the first stage, 1,645 sq. cm. (255 sq. in.) of skin were lifted off the calf with the electric dermatome. The sections of grafts varied from 12.7 cm. (5 in.) to 38.1 cm. (15 in.) in length and were all 7.6 cm. (3 in.) wide, the width of the dermatome, and were 0.0381 cm. (15/1000 in.) thick. The grafts were placed in saline gauze. All the superficial and deep fascia from the knee to the ankle, including the lymph deposits then were surgically excised. The leg was reduced from a circumference of 85 cm. (33½ in.) to a circumference

22. Pratt, G. H., and Wright, I. S.: The Surgical Treatment of Chronic Lymphedema (Elephantiasis), Surg., Gynec. & Obst. **72**: 244, 1941.
23. Brown, H. M.: A Motor Driven Dermatome, Ind. Med. **17**: 46, 1948.

V 14
1951

of 43 cm. (17 in.), which compared favorably with the opposite calf circumference of 41 cm. (16 in.). The skin then was replaced directly on the muscle and sutured in place with fine silk in a continuous fashion. All 1,645 sq. cm. (255 sq. in.) of skin were used. Pressure dressings were applied, chemotherapy

Fig. 2.—Motor-driven dermatome removing long segments of skin 3 in. wide and $\frac{16}{1000}$ in. thick.

was continued, and the wounds and the grafts were not disturbed for a period of 14 days. At the end of that time it was found that approximately 95% of the grafts had taken, and the smaller areas that did not take were mostly at the site of sutures. Three weeks after the first procedure a second operation was performed on the thigh, again using the electric dermatome to lift 1,277 sq. cm. (198 sq. in.) of skin from the anterior and posterior medial surface. All the subcutaneous tissue, lymph and deep fascia, was excised from this area. The tissue removed weighed approximately 15,875 gm. (35 lb.) with about half again as much weight being lost in fluid. The skin grafts were reapplied, this time the skin being tacked only lightly, and the wound was not disturbed for 15 days. The grafts near the knee were placed transversely. At the end of that time it was found that approximately 95% of the grafts had taken, and only one was

Fig. 3.—Subcutaneous tissue, superficial and deep fascia removed en bloc.

partly lost. In this operation an attempt was made to take two grafts .043 cm. (17/1000 in.) deep from the same donor site, and it was one of these second grafts that did not take well. The third operation was performed 19 days after the second, and the entire anterior and posterior parts of the calf skin areas were removed with the electric dermatome; the underlying fat, lymph, and fascial layers were removed in one section. In this instance 1,258 sq. cm. (195 sq. in.) of skin grafts were raised and replaced on the denuded muscle tissue. Several pieces of skin saved from the second stage operation and kept under sterile conditions in the deep freeze at —20 F. were available for this further extensive grafting. The first stage of the operation took 10½ hr. operating time, the second stage approximately eight, and the third, six.

I do not believe this patient could have had a surgical correction of the lymphatic condition without the electric dermatome. I am certain that in this type of work this instrument will be an invaluable adjunct to surgical therapy. Certainly this instrument will aid greatly in burn work. It took grafts from irregular lobular islands of tissue, followed surface contours in the tissue, and lifted skin off tissue with pores 0.5 cm. in diameter. The total operative cases now equal 51, including 12 with this new technique. Of these, 41 are considered excellent, four not particularly satisfactory, and six not improved. One patient died 3 mo. subsequent to all the surgical procedures

Fig. 4.—Skin grafts 20 days after operation.

from mesenteric thrombosis that was in no way related to the operation. All the other patients survived and have been followed for one to 14 years.

PREOPERATIVE PREPARATION

Skin.—The extremity should be elevated for approximately two weeks to permit the lymphedema to drain. Skin preparations during this time should be done with soap and water and also with potassium permanganate solution (1:20,000) to restrict fungus infections and to dry up areas made moist by the infolding of heavy skin. Cultures should be taken of any ulcerations, and the ulcerations should be made surgically clean with potassium permanganate and local application of antibiotics. Muscle adenylic acid, introduced in the vascular clinic of St. Vincent's Hospital in 1950,[24] greatly helps to heal the ulcers. It appears to have a specific effect on the areas of ulceration and reduces weeping. The mechanism of its action is not clear, but it may act by supplying some cellular factor absent in ulcers of this type, and it immediately decreases or eliminates the associated pruritus. Just before operation the skin should be washed with pHisoderm® (a sulfonated detergent) with hexachlorophene

24. Pratt, G. H.; Rottino, A., and Boller, R.: Therapeutic Action of Muscle Adenylic Acid on Ulcers and Dermatitis Associated with Varicose or Phlebitic Veins: Preliminary Report, Angiology 1:94, 1950.

The surgical principle in the treatment of lymphedema is twofold. It is, first, to remove the voluminous subcutaneous and lymph tissue and, second, to try to obtain drainage for the skin through new lymphatic channels. The lymph channels, particularly in the muscle, offer such a possibility, since the lymph pathological condition is in the superficial lymph channels above the deep muscles. Lymph obstruction does not appear to occur below the subcutaneous tissues, nor does it follow the perforator lymph branches into the deep lymph channels. Several surgical procedures have been described, and they will be reviewed briefly. A variation in the technique that recently has been adopted successfully will be discussed.

In addition to surgical sympathectomy, the following measures have been adopted.

Total Fascia Excision Procedure: This procedure was discussed in 1940 [21] and 1941 [22] by Wright and me. It is an extension and combination of other modified Kondoléon procedures and particularly of the Homans [19] operation. In this total operation a sufficient ellipse of skin is removed to over-correct the leg after its excision. The remaining skin of the leg is then undermined completely and carefully. The incision in the thigh is on the lateral aspect, and that in the calf is posteriorly placed. The purpose of placing the incision laterally in the thigh is to protect it from inevitable postoperation contamination by defecation or urination. The posterior calf incision permits complete denuding of the muscle. The tibial bone is placed subcutaneously anteriorly, and the fascia can be raised and excised from either side. The skin is raised from the subcutaneous tissue in the thigh until 80% to 100% of the thigh has been encircled, and the entire circumference of the leg is always so treated in the calf. The incision is then continued through the subcutaneous tissue, superficial fascia, lymph fat, and deep fascia, and this entire area is removed en bloc. This leaves only the skin and the denuded muscles. The skin is then approximated over the bared muscles with interrupted steel wire and is held against the muscle by pressure bandages. In this way it may be likened to an immense skin graft. The dressings are not disturbed for two weeks. This procedure has been used in 38 instances and has given good results in approximately 60% to 70% of the patients.

Free and Pedicle Grafting Procedures [4b]: It was evident very early that in total fascia excision some of the undermined skin would slough, and free grafts or pedicle grafts would be necessary to replace the lost skin. It was found that if the pedicle of the graft were placed above the blocked lymphatic area the skin seemed to heal much better, and there was less residual edema. The lymph drainage was obtained by skin continuity to unblocked lymphatic channels. This surgical procedure was difficult and lengthy and had to be done in stages but was frequently the only effective procedure.

Dermatome Grafts: In 1948 Macey [20] called attention to a variation in the technique in which the skin was removed by the Padgett dermatome, and then the subcutaneous and deep facia were excised and the skin replaced directly on the muscle. He believed that this modification saved time, was technically easier, and that the results were as good.

NEW TECHNIQUE

In 1949 Brown's [23] electric skin graft instrument appeared. With this instrument enormous skin grafts can be raised quickly, the length of these grafts varying only with the availability of tissue from which the skin can be removed. Other instruments are available now.

REPORT OF CASE

The patient, a 47-yr.-old man, had a tremendous lymphedema of the right leg (fig. 1). The circumferential measurements of this leg, taken at the six lobular areas on the anterior surface, were 106 cm., 99.5 cm., 104 cm., 101 cm., 83.5 cm., and 76.5 cm., as compared with those of the left leg, which were 71.4 cm., 61.5 cm., 52.5 cm., 40.2 cm., 38.6 cm., and 36.6 cm.

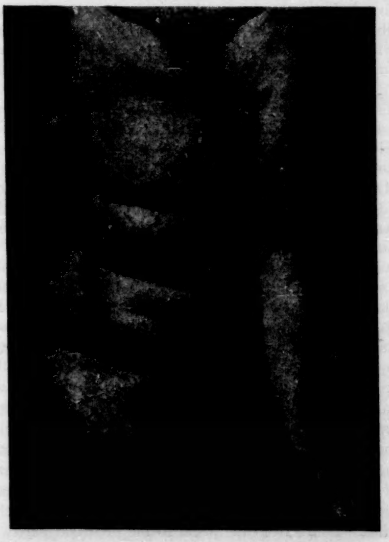


Fig. 1.—Massive lymphedema of 30 years' duration. Previous operation was ineffectual.

This lymphedema had been present 30 years. Some type of a modified Kondoléon procedure had been performed 10 years previously without benefit to the patient. The irregularity of the skin, the incisions made during the previous plastic operation, and the monstrous lobular appearance made any of the operations previously described technically impossible. In addition, the previous procedure had resulted in an infection, and as a result the lines of subcutaneous and fascial plane cleavage were no longer present. This patient was operated on in three stages as follows:

Operation Technique.—In the first stage, 1,645 sq. cm. (255 sq. in.) of skin were lifted off the calf with the electric dermatome. The sections of grafts varied from 12.7 cm. (5 in.) to 38.1 cm. (15 in.) in length and were all 7.6 cm. (3 in.) wide, the width of the dermatome, and were 0.0381 cm. (15/1000 in.) thick. The grafts were placed in saline gauze. All the superficial and deep fascia from the knee to the ankle, including the lymph deposits then were surgically excised. The leg was reduced from a circumference of 85 cm. (33½ in.) to a circumference

22. Pratt, G. H., and Wright, I. S.: The Surgical Treatment of Chronic Lymphedema (Elephantiasis), Surg., Gynec. & Obst. 72: 244, 1941.
23. Brown, H. M.: A Motor Driven Dermatome, Ind. Med. 17: 46, 1948.

V 147
1951

of 43 cm. (17 in.), which compared favorably with the opposite calf circumference of 41 cm. (16 in.). The skin then was replaced directly on the muscle and sutured in place with fine silk in a continuous fashion. All 1,645 sq. cm. (255 sq. in.) of skin were used. Pressure dressings were applied, chemotherapy

Fig. 2.—Motor-driven dermatome removing long segments of skin 3 in. wide and 19/1000 in. thick.

was continued, and the wounds and the grafts were not disturbed for a period of 14 days. At the end of that time it was found that approximately 95% of the grafts had taken, and the smaller areas that did not take were mostly at the site of sutures. Three weeks after the first procedure a second operation was performed on the thigh, again using the electric dermatome to lift 1,277 sq. cm. (198 sq. in.) of skin from the anterior and posterior medial surface. All the subcutaneous tissue, lymph and deep fascia, was excised from this area. The tissue removed weighed approximately 15,875 gm. (35 lb.) with about half again as much weight being lost in fluid. The skin grafts were reapplied, this time the skin being tacked only lightly, and the wound was not disturbed for 15 days. The grafts near the knee were placed transversely. At the end of that time it was found that approximately 95% of the grafts had taken, and only one was

Fig. 3.—Subcutaneous tissue, superficial and deep fascia removed en bloc.

partly lost. In this operation an attempt was made to take two grafts .043 cm. (17/1000 in.) deep from the same donor site, and it was one of these second grafts that did not take well. The third operation was performed 19 days after the second, and the entire anterior and posterior parts of the calf skin areas were removed with the electric dermatome; the underlying fat, lymph, and fascial layers were removed in one section. In this instance 1,258 sq. cm. (195 sq. in.) of skin grafts were raised and replaced on the denuded muscle tissue. Several pieces of skin saved from the second stage operation and kept under sterile conditions in the deep freeze at —20 F. were available for this further extensive grafting. The first stage of the operation took 10½ hr. operating time, the second stage approximately eight, and the third, six.

I do not believe this patient could have had a surgical correction of the lymphatic condition without the electric dermatome. I am certain that in this type of work this instrument will be an invaluable adjunct to surgical therapy. Certainly this instrument will aid greatly in burn work. It took grafts from irregular lobular islands of tissue, followed surface contours in the tissue, and lifted skin off tissue with pores 0.5 cm. in diameter. The total operative cases now equal 51, including 12 with this new technique. Of these, 41 are considered excellent, four not particularly satisfactory, and six not improved. One patient died 3 mo. subsequent to all the surgical procedures

Fig. 4.—Skin grafts 20 days after operation.

from mesenteric thrombosis that was in no way related to the operation. All the other patients survived and have been followed for one to 14 years.

PREOPERATIVE PREPARATION

Skin.—The extremity should be elevated for approximately two weeks to permit the lymphedema to drain. Skin preparations during this time should be done with soap and water and also with potassium permanganate solution (1:20,000) to restrict fungus infections and to dry up areas made moist by the infolding of heavy skin. Cultures should be taken of any ulcerations, and the ulcerations should be made surgically clean with potassium permanganate and local application of antibiotics. Muscle adenylic acid, introduced in the vascular clinic of St. Vincent's Hospital in 1950,[24] greatly helps to heal the ulcers. It appears to have a specific effect on the areas of ulceration and reduces weeping. The mechanism of its action is not clear, but it may act by supplying some cellular factor absent in ulcers of this type, and it immediately decreases or eliminates the associated pruritus. Just before operation the skin should be washed with pHisoderm® (a sulfonated detergent) with hexachlorophene

24. Pratt, G. H.; Rottino, A., and Boller, R.: Therapeutic Action of Muscle Adenylic Acid on Ulcers and Dermatitis Associated with Varicose or Phlebitic Veins: Preliminary Report, Angiology 1:94, 1950.

3%; all other skin preparation or painting having been discarded.

Anesthesia.—Continuous spinal anesthesia is best. It is given by a catheter inserted through a needle in the dura, and the needle is then withdrawn. Fractional doses of spinal anesthesia can be given during the entire course of the operation, and it minimizes shock.

Blood Transfusion.—The blood replacement factor must be carefully controlled since the blood and fluid loss in these patients is enormous and often unnoticed. All sponges, clots, towels, etc. should be weighed from time to time, suction bottles checked, and the blood replaced quantitatively pint for pint, regardless of the patient's color, pulse rate or blood pressure. The apparently innocuous continuous loss of blood and serum may not be a registerable factor for some time, and then profound

Fig. 5.—Healed leg.

shock, which may be irreversible, may occur suddenly. It is made more likely by the large areas of denuded tissue and the loss of lymph and serum. Quantitative replacement is of great importance, and it must be emphasized that only by weighing the sponges and clots can the amount of blood loss be calculated.

Position.—The patient's foot remains in his slipper, through the heel of which a pin is inserted. The foot is then elevated by a rope passing through a ring in the operating room ceiling. The leg then can be draped, and all sides of it are available to the surgeon. Bending the opposite leg into a modified Sims position gives better exposure.

Surgical Technique.—Since a tourniquet rarely can be effective, preparations must be made for extensive bleeding. Skilled assistants and a sufficient number of hemostats are mandatory. In this clinic more than 400 hemostats have been used at one time. In the thigh tension on the tissue being excised creates a line of cleavage In the calf, however, some of the deep fascia also surrounds the muscle bundles, and the dissecting is more difficult. Great care must be taken near where the peroneal nerve winds around the neck of the fibula. The ankle and knee joints create special problems. In general, the foot should not be denuded, as a slough in this area may expose the tendons, is difficult to graft, and may prevent the patient from wearing shoes. Any swelling in the foot can be controlled later by using a high leather shoe for support.

Silk or cotton sutures should be avoided, since they may creat sinuses. The ties should be of fine catgut (000). The skin is best applied with fine steel wire (No. 36), which has minimal tissue reaction.

Support.—Adequate support is necessary for an indefinite time after the operation. This is important, and its principles must be understood. The tendency to edema remains, since the underlying cause of the lesion is not clear. The space between the skin and the muscle must be obliterated, for if it is not fibrosis may occur, causing the space to remain. The principles discussed under conservative therapy apply here.

SUMMARY

1. The causes and conservative type of therapy of lymphedema have been presented.

2. The problem of surgical correction of lymphedema has been reviewed.

3. These patients need special care if they are not to become totally disabled. Because of the monstrosity-like appearance of their leg, neurotic or even psychotic tendencies develop. Surgical correction not only helps overcome these tendencies, but it may play the major part in the rehabilitation program.

4. The development of the motor-driven dermatome and its incorporation into the technique has been of inestimable value in easing the technical difficulties of the operation and may well have revolutionized the surgical concepts of the attack on this problem. The technique as we have used it in 12 instances is presented.

5. Adequate preoperative preparation, including antibiotic therapy and prevention of fungus infection, the use of pHisoderm® (a sulfonated detergent) with hexachlorophene preparations to combat infections, adequate supplies of blood, and continuous spinal anesthesia, increases the safety of the procedure. It is suggested that in these large cases two teams work on the part at the same time, thus decreasing the operative time by half.

6. Blcod transfusions are an important factor. The sponges and all blood should be weighed and calculated against the weight of dry sponges in order to correctly estimate the blood loss, and this blood loss would be replaced quantitatively without regard for signs of shock. Since the blood is lost over a period of time, shock when it intervenes may be sudden, severe, and not reversible.

7. Support after the operation is obligatory. The principles of this support must be understood.

30 East 60th St., New York 22, N. Y.

V 14
1951

MASS SCREENING FOR GLAUCOMA

Solomon S. Brav, M.D.
and
H. Peter Kirber, M.D., Philadelphia

There is general agreement among all ophthalmologists that the most important factor in the management of chronic simple glaucoma is early detection. Review of the literature on glaucoma reveals no extensive study concerning the incidence of this disease in a cross section of a normal population.

Mass screening has been applied successfully for the early detection of diabetes, tuberculosis, cancer, and other chronic diseases. On this premise the Philadelphia Committee for Prevention of Blindness initiated a comparable screening program for glaucoma and chose for a laboratory large industrial plants where a cross section of the local population, 40 years of age and older, might be sampled.

A preliminary report on the first 3,923 cases screened was presented at the Annual Conference of the National Society for the Prevention of Blindness in March, 1949. The report dealt with methods employed and results gathered from clinic and private ophthalmologists' records of diagnoses.

It is our desire to present at this time a further and uniform diagnostic study of 10,000 cases screened in industries and under identical conditions.

Details for organizing the mass screening procedure, the standard for examination and follow-up, and the criteria established for interpreting findings follow in sequence.

PROCEDURE

Plan for Mass Screening.—The plan for mass screening included (1) permission from the management to examine employees; (2) cooperation with the plant physician and personnel department in organizing details; (3) an educational program to acquaint employees with the plan; (4) selection of suitable space.

Examining Unit.—The examining unit consisted of (1) an ophthalmologist; (2) a secretary to take dictation; (3) a social worker to take histories.

Examination.—The examination included (1) a test for visual acuity with correction; (2) external examination for gross pathology; (3) observation of the fundus, especially of the appearance of the nerve head and gross lesions; (4) a test for ocular tension with a calibrated Schiøtz tonometer.

Findings were charted on a form card by check marks. Use of the routine outlined and the time-saving record card made it possible to examine 20 persons per hour.

DISPOSITION OF CASES

All persons received a report of the examination at their home address. Those found normal were so notified. Those with significant pathology were advised to consult their ophthalmologists or an eye clinic. Those with tonometric readings of more than 25 mm. were recalled for further checking. Those with readings above 25 mm. on more than three occasions were scheduled for work-up by their own oculists, a glaucoma clinic or by ophthalmologists employed by the Philadelphia Committee for Prevention of Blindness for the case-finding program.

Our routine diagnostic procedure on those persons consisted of further tonometric studies at different times of the day, with and without hydroxyamphetamine (paredrine*) hydrobromide instillation. To rule out scleral rigidity different weights were employed. The water-provocative test of Marx was performed in the plant. Darkroom tests and visual-field studies were performed at the central office of the Philadelphia Committee for Prevention of Blindness.

Persons with definite or early glaucoma were referred with a report of findings to their own eye physicians or to a glaucoma clinic. A considerable number of borderline patients are being reexamined every six months; still others are recalled once a year. Certain patients have been followed at regular intervals for better than five years.

RESULTS

Employees examined (age 40-65 yr.) 10,000

Definite glaucoma	84	1.53%	2.24%
Early glaucoma	69		
Borderline cases	71		
Observation	100		

The diagnostic criteria undoubtedly vary with each ophthalmologist, depending on his training and personal experience. Nevertheless, certain standards have to be defined arbitrarily in order to proceed with a study such as this. We have therefore chosen the following bases for my classification of diagnosis which we trust will be acceptable to all ophthalmologists.

Definite Glaucoma
- Tension: Over 40 mm. on more than one occasion.
- Fields: Tension under 40 mm. but with definite glaucomatous field defects (at least a Rönne step).
- Fundus: Normal or abnormal.
- Visual Acuity: Normal or reduced.

Early Glaucoma
- Tension: Persistently over 32 mm., or a difference of 6 mm. or more between the two eyes, on more than two occasions.
- Fields: Accepted early changes, such as baring of the blind spot, vertical enlargement, Seidel scotoma.
- Fundus: Of no diagnostic value.
- Visual Acuity: Of no diagnostic value.
- Provocative Test: A rise of 9 mm. within one hour or peak above 32 mm. on the water-drinking test (Marx).

Borderline
- Tension: Persistent or intermittent readings between 28-32 mm.
- Fields, Fundus, Visual Acuity: Normal.
- Provocative Test: Rise of 6-8 mm. within one hour on the water-drinking test (Marx).

Observation
- Observation included individuals who had no sign of glaucoma but are being seen once a year because of a family history of glaucoma; or a difference of 4-6 mm. or more between the two eyes, with tensions remaining below 28 mm.

This study is a continuation of the Philadelphia Committee for Prevention of Blindness experiment in glaucoma case-finding.
Read before the Section on Ophthalmology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

Normal
Tension: 14-28 mm., with a difference of up to 4 mm. between the two eyes.
Fields, Fundus, Visual Acuity: Normal.
Provocative Test: A rise of less than 6 mm. within one hour on the water-drinking test (Marx).

DISCUSSION OF CRITERIA

Tension.—The tonometer used was the standard Schiøtz, manufactured in this country and calibrated according to the Academy standards. The latest nomogram of Friedenwald was used.

The mechanical imperfections of tonometers have been previously considered in many publications. The majority of patients will permit tonometric measurements without resistance. Some individuals will hold their breath or squeeze their lids or become emotionally upset and thus produce false readings. Every oculist is familiar with these difficulties. In spite of them, tonometry is unquestionably the best method for the rapid screening of persons for the early diagnosis of glaucoma. Normal tension in this study was considered the statistical average and not normative tension, as defined by Friedenwald. Gradle, Posner and others hold that tensions fairly high in the 30 mm. bracket could be maintained for considerable periods with no damage to health and function of the eye. On the other hand, Daily, Grant, and others have stated that a tension of over 30 mm. cannot exist for a long period without pathologic changes. Therefore, the upper limit of normal was set arbitrarily at 28 mm.

Dissimilar Intraocular Pressure.—This is a subject which has received considerable attention from Downey, Posner, and others. After study of many cases over prolonged periods, these authors believe that a difference of 4 mm. between the two eyes is significant and should be considered preglaucomatous. Accepting the Schiøtz tonometer as an excellent instrument, but recognizing that a difference of up to 3 mm. between the two eyes lies within the margin of error of absolute vertical position, absolute center of the cornea and inconstant steadiness of the hand, a difference of 4-6 mm. might be regarded as borderline, and a difference of more than 6 mm. should be considered preglaucomatous.

Fields.—For this study we have accepted the characteristics of early field changes as described by Grant, Blaxter, and Traquair. Grant and Blaxter have studied methods for the detection of very early field changes. Traquair has stated, however, that the presence of field changes indicates that the disease has existed for some time and is already well established. Field defects are therefore not an early sign of glaucoma but merely indicate the extent of the damage already inflicted on the nerve fibers. He has stated that a completely negative result from perimetry does not necessarily contraindicate glaucoma but merely shows that the disease, if present, has not developed far enough to produce field changes. Some of the individuals examined, with persistent tension over 32 mm. and with positive water provocative or other tests, were therefore classified as early glaucoma despite the fact that they showed no demonstrable field changes.

Fundus.—The anatomic variants of the nerve head resembling glaucoma are so many we did not attempt to classify the disks according to Elschnig or Kronfeld. Typical glaucomatous atrophy will be seen but rarely in mass screening for glaucoma. Many very deeply cupped disks were nonglaucomatous, and a tension of over 50 mm. was found on several occasions to be associated with a flat disk. Most ophthalmologists will agree that the appearance of a disk is of no value in the early diagnosis of glaucoma.

Visual Acuity.—A similar situation exists in relation to visual acuity, as it is well known that vision of 6/6 can be found in many far-advanced cases where the field is contracted to 10 or 15 degrees. We would like to mention in passing that there is a surprisingly large number of people employed in industry who have less than 6/15 vision and who seem to be doing their work satisfactorily.

Provocative Tests.—There seems to be general agreement that the water-drinking test of Marx is the most suitable provocative test. It is very practical for mass screening, since seven patients can be handled simultaneously, allowing two minutes for tonometry on each and taking readings every 15 minutes. We were guided in the interpretation of the water test by the studies of Sugar and of Leydhecker.

Gonioscopy.—Undoubtedly gonioscopy is a valuable aid in the diagnosis of glaucoma, but we have not performed it on a sufficient number of patients to incorporate findings of statistical value.

SUMMARY AND CONCLUSIONS

Experience in the mass screening of 10,000 persons is presented, tabulated, and discussed. Methods for the diagnosis of early glaucoma are noted briefly. The incidence of undiscovered glaucoma in the age group of 40-65 years has been found to be 1.53%. Few people of more than 65 years of age are employed in industry. It is obvious that the incidence of glaucoma would have been greater had this segment of the population been available for study. It is conceivable that the diagnosis of early glaucoma was missed in a few cases. Borderline cases should also be considered as potential cases of glaucoma. Therefore, the incidence of undiscovered glaucoma in the general population is estimated at 2%.

The results of this study support the contention of many authors, notably Kronfeld, Sugar and Haden, that the practice of routine tonometry on all persons past the age of 40 is the easiest and most accessible method for uncovering large numbers of cases of glaucoma without burdensome equipment or difficult studies.

In order to reach large masses of persons for eye examination two methods are suggested: (1) the organization of mass screening in industry, possibly coincident with routine physical examination; (2) the creation of a specialized agency, approved by the local County Medical Society, which will devise plans for mass screening to discover persons afflicted with or suspected of having glaucoma and will coordinate medical, clinic, public health and social welfare services, and other community resources to make effective the ophthalmologist's recommendation for observation and treatment.

1831 Chestnut St. (Dr. Brav).

V 14
1951

MEDICAL COUNSELING CLINICS FOR YOUNG NARCOTIC ADDICTS

Leonidas H. Berry, M.D., Chicago

In this paper a plan for medical prevention and long term follow-up care of narcotic addiction among adolescents and young adults will be described.[1] The incidence of addiction has reached epidemic proportions in certain areas of the United States. Figures from the United States Public Health Hospital for the treatment of addiction at Lexington, Ky.,[1a] indicate that about one-half of the population of that hospital comes from New York City and about one-fourth from Chicago. Reports in increasing numbers tell of the spread of addiction to smaller cities and rural areas.

There is extensive evidence that the drugs are distributed by an organized underworld system reaching outside the continental United States, with its terminals located primarily in the poorest and most densely populated communities. These illicit drugs are planted first in neighborhoods that have the least social and political prestige. The instruments of social malbehavior and crime—whether they be houses of prostitution, "policy wheels," "bootleg" liquor, or juvenile "dope dens"—are usually found in greatest numbers in areas of greatest economic depravity. These areas offer the most immunity for the organized distributors of the instruments of crime. The community incidence of drug addiction in Chicago follows the pattern of distribution of the sources of supply of the drugs. Statistics collected by the Chicago Crime Prevention Bureau [2] show that the densely populated South Side was one of the first areas to show an incidence of addiction in epidemic proportions. The incidence is also very high along West Madison Street's so-called Skid Row and in the vicinity of North Clark Street. The fad is fast extending into all areas of the city, into suburban areas, and even into rural districts.

There is no evidence that susceptibility to drug addiction has anything to do with race. The concept of single causes to explain a given type of social behavior is hazardous. Many young persons from socially well-adjusted families are already drug addicts or are seriously imperiled because of the spreading availability of the drugs. The very nature of adolescence, with its instability of personality, underdeveloped poise and willpower, and abundance of adventuresomeness, curiosity, and courage, offers some degree of susceptibility to drug addiction.

Ultimate control of the drugs at the distribution level is seen as the final stroke which may destroy the epidemic nature of the problem. Until this is done, it remains the problem of the medical profession to press vigorously for medical prevention of addiction and rehabilitation of the thousands of youths at all social levels who have been victimized and enslaved by drug addiction.

The prognosis of narcotic addiction as a disease is grave. Society and the majority of those who deal with the problem of narcotic addiction generally consider it to be criminal behavior. On the other hand, psychiatrists, psychologists, and clinicians who have studied the problem conceive of addiction as primarily a psychosomatic disease, the criminal aspect occurring secondarily. The medical approach to the problem has lagged behind the educational and law enforcement efforts in this field. However, law enforcement is a formidable job.

The medical care of addicts is usually carried out in institutions (drug withdrawal should not be attempted in clinics), where gradual withdrawal of the drug is undertaken with a varying amount of after-care. At the Lexington, Ky., hospital the optimum treatment time is four to six months. It is estimated on the basis of the number of patients who return and other information [3] that about four out of five will return to the use of the drugs. Figures from the earlier literature show an even greater relapse rate. Only 2.5% of the treated patients in one series were still off the drug after five years. These observations were made before the present epidemic among adolescents. It is evident that a longer period of medical supervision will be necessary for effective rehabilitation.

A study of the literature and interviews with authorities in Chicago, Lexington, New York, and elsewhere revealed no comprehensive medical program for long-term follow-up and medical prevention of narcotic addiction. The plan of medical counseling clinics which follows was formulated after preliminary investigation and study of the problem.

Medical Prevention Program (Fig. 1).—The first step in the prevention plan is case finding, which is done primarily among high school groups and those who have recently graduated or dropped out of school and are not greatly addicted. These persons would be at the "reefer-smoking" stage or would have had only an occasional "shot" of heroin, and would not have been in the hands of the law. These young persons would be induced to come into the clinic and receive counseling against the tragedy of greater addiction. They would be given physical examinations, psychiatric screening or detailed psychiatric tests, vocational or occupational counseling, and other types of therapy (to be detailed later in this paper).

The case-finding job through the public schools would depend largely on cooperation among principals, teachers, school psychiatrists, truant officers and the clinic, with the clinic field social worker as a liaison person. Many young drug addicts are free in the larger communities, groping for help outside the law. Many parents of drug addicts are looking for help for their children and would gladly cooperate to get them into the hands

Read at a symposium of the Cook County Physicians Association and the Chicago Crime Prevention Bureau, LaSalle Hotel, Chicago, May 9, 1951.

Attending Physician, Cook County and Provident Hospitals; Professor, Cook County Post Graduate School of Medicine, and Former Police Surgeon, Chicago Department of Police.

1. House Bill No. 1257 of the 67th Illinois General Assembly, sponsored by Representatives Romano, Kart, McClory, Thon, Jenkins and Davis and Senator Libonati, authorizing narcotic clinics, was based on this plan.

1a. Vogel, V. C.: Personal communication to the author.

2. Higgins, L.: Personal communication to the author.

3. Vogel, V. C.: Quoted at a symposium on narcotic addiction of the Cook County Physicians Association and the Chicago Crime Prevention Bureau, Chicago, May 9, 1951.

of physicians before they get into the hands of the law. Victims helped by the clinic would undoubtedly send in their friends. Welfare agencies, churches, and law courts are potential sources of early referrals.

Some persons contacted by these methods would be only at the marijuana stage or their use of stronger drugs

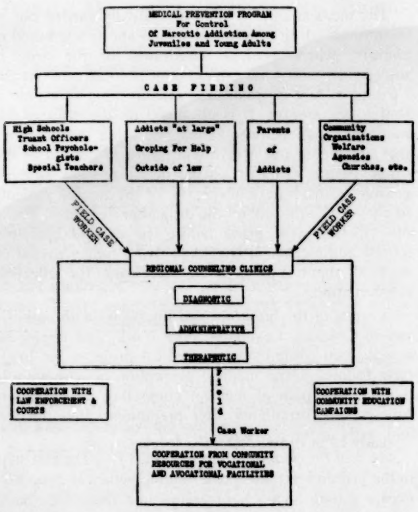


Figure 1

would be sufficiently recent to justify clinic care. The final decision to accept a case in the clinic for preventive or follow-up care would depend on results of medical examination and psychiatric evaluation of the individual personality. Of course, some cases would not meet the standards of acceptance, but the clinic facilities would aid in their placement in hospitals for adequate withdrawal treatment. Thus, the clinic would serve as a clearing house, the value of which would be measured in terms of removing from the community sources of "infection" and "reinfection" of other susceptible persons. To carry the case-finding job further in institutions like public and private schools, group psychiatric screening tests could be applied by social workers, school teachers, or others after a briefing course by a psychiatrist.[4] By this method potential addicts or highly susceptible persons might be identified and future programs worked out. Far-reaching community contacts and the cooperation of a large number of civic institutions and organizations, public and private, would be necessary for successful operation of this plan. But the threat of social disintegration of a large segment of the youthful citizens more than justifies the magnitude of the effort.

In developing this plan in Chicago a large citizens' advisory committee [5] representing a broad cross section of community institutions and services gave advice and pledged cooperation in its implementation. Among the members of the committee were psychiatrists, internists, clinical psychologists, psychiatric social workers, welfare workers, occupational therapists, vocational counselors, probation and truant officers, and representatives of the school board, employment services, crime prevention bureau, law enforcement agencies, courts, and religious organizations.

Medical Counseling Clinics (Fig. 2).—The clinics would be attached to existing out-patient departments of strategically located hospitals. A patient would first have a diagnostic study, including physical and psychiatric examinations. Blood and urine tests for drug concentration would be used or further developed. History and physical examination might show evidence of drug use through old or recent needle marks, undernutrition, and other diseases incident to addiction. The patient might be deeply disturbed and in need of psychotherapy or he may need only sympathetic direction and recreational or occupational therapy.

Vocational counseling and, finally, job placement would be an important part of the rehabilitation process.

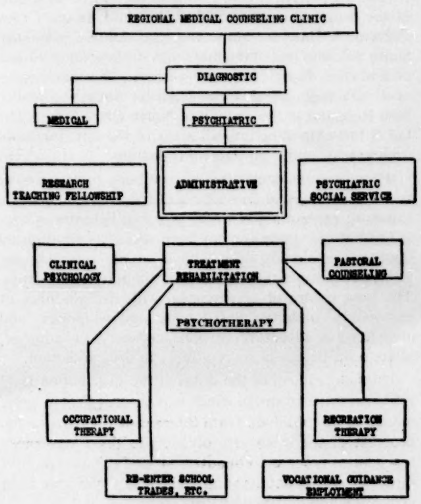


Figure 2

Such therapeutic facilities would be made available by internists, psychiatrists, clinical psychologists, psychiatric social workers, and job placement or occupational counselors in the clinics. Referrals would be made to community resource facilities. Such facilities might be occupational therapy sources, job placement sources, such as state employment services, and direct contacts with per-

4. Sherman, I.: Personal communication to the author.

5. The subcommittee of the advisory group was composed of the following persons: psychiatrists, Dr. Walter Adams and Dr. Irene Sherman; psychologists, Dr. Thelma Thurstone and Dr. Albert Beckham; internists and hospital administrators, Dr. Henry B. Matthews, Dr. Arthur G. Falls, and Dr. John C. Troxel; occupational therapist, Beatrice Wade; probation officer, Harry Hill; psychiatric social worker, Henrice Gould, and journalist, Charles Davis.

V 14
1951

sonnel directors in industry. An understanding and cooperative personnel director in private industry might do a smoother job of reintegrating the former addict as a useful employee than a public employment agency.[6] Handling of the patient as an agency-referred employee, and not a routine job placement, would be important. Referrals might also be made to trade schools, academic night schools, and special job training programs. Other patients would find therapeutic help or integration into the recreational programs of groups such as the Young Men's Christian Association,[7] Young Women's Christian Association, and Catholic Youth Organization. During this period regular visits to the clinic would be required. Such a clinic, with adequate professional personnel, would combine sympathetic understanding with attempts to develop self-reliance and to discover potential talents for constructive contributions to society.

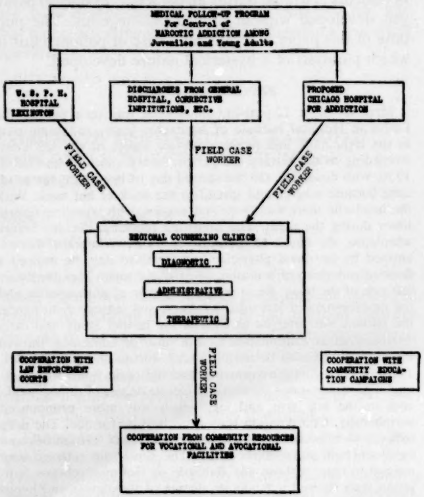


Figure 3

Medical Follow-Up Program (Fig. 3).—The follow-up phase of the program would involve case finding as the initial step. An important source would be patients discharged from the United States Public Health Service Hospitals. The director of the narcotics hospital at Lexington, Ky., feels that development of long-term follow-up programs in the various communities of the country would enhance the effectiveness of the hospital care at that institution. The hospital administration in turn would gladly cooperate with any well-organized follow-up program in local communities.[8] Cooperation, therefore, from federal narcotic hospitals to the extent of selling the clinic to patients about to be discharged in exchange for follow-up information would serve as mutual ground for cooperation between these hospitals and community clinics. General hospitals in large cities have addicts at all times admitted for other illnesses, which often are complications of addiction. Complications frequently seen are hepatitis, cellulitis, meningitis, endocarditis, and, occasionally, acute tuberculosis. In a fatal case at Cook County Hospital in Chicago, the patient died of multiple liver abscesses due to the use of contaminated syringes and needles in self-administration of narcotic drugs. These patients, on discharge from general hospitals, usually have had little, if any, specific treatment for their addiction. However, their habit has been broken, in the parlance of the addicts, by the "cold turkey" method. Near the time of discharge these patients could be psychologically prepared by the hospital's social service department and referred directly to the narcotics clinic. The liaison job at this point would be very important to the success of this type of referral.

In Chicago there is hope that a preliminary counseling clinic may be set up in the House of Correction as a part of this plan for care of narcotic addicts. Illinois Research and Provident Hospitals have also been proposed. Addicts being discharged from local penal institutions at present would be likely candidates for counseling clinics. On discharge they would be referred to regional counseling clinics attached to out-patient departments of local hospitals. Cooperation by the judges of the narcotics court, the juvenile court, and other branches of the courts of law would greatly facilitate this program. A probationary period of one year by a sympathetic court at this point would help to control patients during rehabilitation. The world's first narcotics court was established in Chicago several months ago, and this type of cooperation has already been promised to the local narcotic clinics which are being set up.[9] Narcotic addicts discharged as cured from hospitals and penal institutions, unsupervised as they usually are, are a continuous source of contagion to other susceptible persons.

Once the patient begins attendance at the clinic, his diagnosis, or diagnostic reevaluation in the case of those having had some medical care, would be made. From this point forward in general the plan of follow-up care and rehabilitation would be similar to that outlined under the prevention phase of the plan.

NUMBER OF CLINICS

A careful survey of local needs would determine the number of regional clinics to be set up in a given community. A minimal clinic unit should include a chief psychiatrist as administrative officer of the clinic, part time; an internist, part time; a clinical psychologist in charge, full time; an occupational counselor; a psychiatric social worker, full time; two field social workers, full time; an office secretary, full time; a typist, part time; and psychiatric and physiological research fellows.

A single clinic unit could be mobile and clinic sessions could be held at one or more locations where funds or case load did not warrant two or more regional clinics.[10] It is believed that the best cooperation would be had when the clinics are close to the patient sources and are attached to already existing general hospital out-patient departments. In this way the drug addict could lose his social identity among the patients of the general clinic.

6. Troxel, J. C.: Personal communication to the author.
7. Morris, O. O.: Personal communication to the author.
8. Vogel, V. C.: Personal communication to the author.
9. Judge E. G. Gorman: Personal communication to the author.
10. Cross, R.: Personal communication to the author.

Cooperation of the law enforcement agencies would be important at all times in an attempt to foil the hounding efforts of peddlers and in the management of patients who need their services.

The sources of funds might be federal, state, county, municipal, or private. A rental fee might have to be paid to local hospitals or to the hospitals housing the clinic. This fee would include compensation for minimal nursing care and laboratory facilities. Such hospitals could serve as the administrators of the funds for salaries to clinic personnel.

The implementation and supervision of the regional group of narcotic clinics could be handled by a working subcommittee of about 12 technical experts who would be representatives of a much larger advisory board. The larger board should have representatives of welfare organizations, employment services, the school board, religious, business, and industrial organizations, courts of law, and press relations. Because the early high incidence will occur in poorer communities, racial connotations may be injected into the interpretation of statistical data, but such interpretations have no basis in fact, and race or religion should not influence the type, character, or location of treatment facilities. Improper handling of this problem may lead to unfortunate community attitudes and tend to exaggerate the pathological feelings of inferiority or superiority in the addicts whom these efforts are designed to help.

A narcotic clinic program should provide for psychiatric and physiological research to be carried out along with a program of clinical care. Controlled information from widely distributed sources throughout the country would help to solve the problems of causes and possible "cures" for narcotic addiction as it manifests itself in nation-wide epidemic proportions.

SUMMARY

Narcotic addiction among juveniles and young adults has reached epidemic proportions throughout the nation. An international underworld system controls the sales promotion and distribution of the drugs. Medical prevention and follow-up care is a reasonable community responsibility of the medical services and allied organizations. Withdrawal of narcotic drugs is best carried out in a hospital, but about four out of five addicts return to drug use after the best available treatment. A plan of long-term regional counseling and rehabilitation clinics is presented.

412 E. 47th St.

The Physician and His Workshop.—Another requisite for the good physician is an inborn generosity of mind, which displays itself in kindness to patients, tolerance of their foibles and sympathy with their fears. Intellectual pride is the shipwreck of many a young physician, as gentleness and humility are the salvation of others. . . . Acton's famous tag, that power always corrupts, applies to medical men as much as to tycoons and princes, and the best antidote to this corruption is the humility that comes of our manifold errors and human weaknesses and the warmth of our sympathy for those whom it is our privilege to serve.—C. G. McDonald, The Physician and His Workshop, *Medical Journal of Australia*, June 23, 1951.

CLINICAL NOTES

HYSTERICAL PARALYSIS ASSOCIATED WITH POLIOMYELITIS

Richard H. Young, M.D.
and
Harland T. Hermann, M.D.,
Omaha

Although there is a voluminous literature on poliomyelitis, little has been written about personal and emotional factors associated with this illness. One of us (R. H. Y.) has reported on the emotional features of poliomyelitis,[1] and in a second paper [2] described a group of patients in whom, during an epidemic, hysterical paralysis developed without proved poliomyelitis. The purpose of this paper is to present a case of poliomyelitis in which paralysis of a hysterical nature developed.

REPORT OF A CASE

Mrs. W. S., a 22-year-old housewife, was seen first at the Lutheran Hospital because of headache, fever, and some pain in the right flank and in the posterior aspect of the left knee. According to the history the patient first became ill on Oct. 1, 1950, with headache. On the second day of her illness the headache became severer and spread to the back of her neck. With the headache there was fever and nausea, with vomiting several times during the night. The following morning, the day before admission, she had a temperature of 99 F. When she was examined by her local physician, on the third day, he noticed a decided reduction of sensation to pain and touch over the entire left side of the body. Because of a suspicion of poliomyelitis and the development of left-sided weakness and sensory disturbance, the patient was referred to Omaha for further study and care.

Neurological examination at the time of admission showed the cranial nerves to be normal except for an absent gag reflex. There was no facial asymmetry, and the optic fundi were normal. The motor status showed a moderate degree of diffuse weakness in the left arm and leg, which was more pronounced peripherally. Coordination tests were well performed. The deep reflexes were present in both upper and lower extremities and equal on both sides of the body. The superficial reflexes were normal in type, without any Babinski or Hoffman reflexes. Sensation tests showed a moderate degree of hypalgesia and hypoesthesia, which extended over the left side of the body.

The day after admission a lumbar puncture showed a normal pressure of 130 mm. of water. The cell count was 62, of which 56 were lymphocytes. The Wassermann reaction was negative, and the colloidal gold test result was 0022211000. The urinalysis revealed no abnormalities except a trace of albumin. The red blood cell count was 4,250,000 and white blood cell count 11,600.

A diagnosis of poliomyelitis was made, and the patient was transferred to the poliomyelitis ward of the county hospital. During the early part of the hospital stay there was little change in her general condition, but the degree of paralysis became somewhat less and was not localized to any special muscle or group of muscles. The reflexes continued to be present and equal, and the sensory loss was somewhat variable and became less marked with the passage of time.

Throughout the hospital stay the patient was tense and irritable and had considerable difficulty in sleeping. She would not discuss her emotional tension in any detail but did state that she was bothered by recurring memories.

When the acute features subsided, the patient was able to discuss her marital adjustment, which had not been good. An

1. Young, R. H.: Clinical Syndrome Simulating Poliomyelitis, New England J. Med. **230**: 794-795 (May 22) 1947.
2. Young, R. H.: The Patient's Attitude Toward Poliomyelitis, Ment. Hyg. **33**: 262-270 (April) 1949.

V 14
1951

extramarital interest had given rise to considerable jealousy, and the husband threatened to kill himself. The relationship was not terminated, and finally the husband shot himself in the left side of the chest and was seriously injured. However, on inquiry he insisted that he had accidentally shot himself, and in this statement his wife supported him. The husband made a satisfactory recovery and returned home from the hospital the week before the wife's present illness began.

On the fifth day of hospitalization the spinal fluid was reexamined. Again there was a normal pressure, with a cell count of 16 and a total protein value of 38 mg. per 100 cc. At this time she was given some explanation of the hysterical mechanism involved, her guilt and need for punishment. She was encouraged to get out of bed, and after her first attempt to walk she was able to get around very nicely, although the diminution in sensation over the left side of the body remained until the time of discharge.

SUMMARY

A case of poliomyelitis with associated hysterical paralysis and sensory disturbance is reported. This case is of some significance in that it emphasizes that there are many emotional repercussions in poliomyelitis, and that on occasion the illness may be utilized in a hysterical conversion.

1436 Medical Arts Bldg.

CHROMATE DERMATITIS IN RAILROAD EMPLOYEES WORKING WITH DIESEL LOCOMOTIVES

John R. Winston, M.D.
Edmund N. Walsh, M.D., Temple, Texas

Chromate dermatitis, resulting from contact with diesel locomotive radiator fluid, constitutes an industrial hazard of growing importance in the railroad industry because of the rapid change to diesel locomotive power. Its occurrence should be brought to the attention of industrial surgeons, dermatologists, and safety engineers, so that it may be promptly recognized and proper preventive and protective measures instituted.

During the past four years six patients have been hospitalized in the Gulf, Colorado and Santa Fe Hospital, Temple, Texas, because of an incapacitating dermatitis presumably due to contact with a chromate compound. These patients were men who worked in a diesel locomotive shop and were exposed in varying degrees to sodium bichromate, which is an antioxidant generally used in diesel locomotive radiator fluid. All showed positive patch tests to samples of the radiator fluid and to 0.25% sodium-bichromate solution. They were able to work on steam locomotives without trouble, but, in each instance, when these men again worked on diesel locomotives, there was a recurrence of the eruption.

The following case report illustrates the usual history and clinical course of the patients we have observed with this condition.

REPORT OF A CASE

G. G. Y., a machinist, 42, had been working in a diesel locomotive shop for about six months before he noticed a "rash" that appeared on the volar surface of each wrist. During this interval he was repeatedly exposed to radiator fluid in the process of dismantling diesel equipment. The eruptions became progressively worse, so that he was forced to stop work. For a period of six weeks he was treated by the plant physician with various applications without improvement. When first seen at the Gulf, Colorado and Santa Fe Hospital Hospital, the dermatitis consisted of patchy, pruritic, erythematous, slightly scaly lesions extending from the dorsum of the hands over both forearms to the elbow. Positive patch tests to diesel locomotive radiator fluid and to 0.25 % solution of sodium bichromate were found. The patient lost approximately three months' work because of this first period of dermatitis. Although he was advised to avoid further contact with diesel radiator fluid, he went back to his previous assignment, and by the third day a recurrence of the eruption on his forearms had developed. Two weeks after he returned to work, one of the locomotive radiators overflowed, and he was drenched with the hot fluid across the left shoulder and back. Within 24 hr. there was an extensive dermatitis involving this area. On this occasion the patient lost approximately seven weeks' work. During this last episode he was given dimercaprol injection (BAL in oil) in doses recommended for heavy-metal poisoning. The eruption did not respond remarkably to this medication, but the patient stated that the symptoms of burning and itching diminished during the treatment period.

In our experience, the dermatitis has responded rather slowly to any therapy. Treatment has consisted of wet dressings and bland ointments, with minimal superficial x-ray therapy to hasten the clearing of the lesions.

Approximately 200 employees work in the diesel locomotive repair shops, which have been in operation for about four years. During this four-year period, the six cases observed by us represent those who were incapacitated because of the dermatitis and hospitalized at the Association Hospital. Some of these patients have shown a slightly elevated, faintly erythematous, scaling eruption that has persisted about the wrists and ankles. Becker [1] has suggested that the dermatitis persisting after removal of the offending agent may be functional. It has been necessary for these men to rearrange their jobs to avoid further contact with the bichromate solution. It has not been necessary for any of the men coming under our observation to seek employment outside the railroad industry.

BRIEF REVIEW OF PROBLEM

Although the toxic effects of chromium compounds have been recognized for over 100 yr.,[2] they were not of industrial importance until the mineral was used for chrome plating. Chromic-acid derivatives taken internally may cause burning, pain, vomiting, fever, hematuria, albuminuria, anuria, and death. Such symptoms have rarely been seen in industrial workers because large doses are necessary to produce them.[3] Ulcers of an exposed part—such as hands, tongue, oral mucosa, and nasal septum—have been reported as caused by the caustic action of the chromium compounds.[4] Chromate pneumoconiosis has been reported in persons exposed to finely pulverized chrome ore.[5] Hypersensitivity to

From the Department of Medicine (Dr. Winston) and the Department of Dermatology (Dr. Walsh), Scott and White Clinic, affiliated with Scott and White Memorial Hospitals and Scott, Sherwood and Brindley Foundation; also, Chief Physician (Dr. Winston) and Consulting Dermatologist (Dr. Walsh), Gulf, Colorado and Santa Fe Hospital.

1. Becker, S. W.: A New Interpretation of Some So-Called Positive Patch Tests, with Special Reference to Metals Used in Industry, J. Michigan M. Soc. **45**: 65, 1946.

2. Cumin, W.: Remarks on the Medicinal Properties of Madar, and on the Effects of Bichromate of Potass, on the Human Body, Edinburgh M. & S. J. **28**: 295, 1827.

3. Kirschbaum, E. H.: Chromium Poisoning with Especial Attention to Its Industrial Hazard, Proc. Connecticut M. Soc. **143**: 176, 1935.

4. Lieberman, H.: Chrome Ulcerations of the Nose and Throat, New England J. Med. **225**: 132, 1941. Johnstone, R. T.: Occupational Medicine and Industrial Hygiene, St. Louis, C. V. Mosby Company, 1948, p. 314.

5. Lukanin, W. P.: The Pathology of Chromate-Pneumoconiosis, Arch. für Hygiene **104**: 166, 1930.

chromate compounds, resulting in occupational dermatitis, has been described as occurring in workers in woolen mills,[6] aircraft plants,[7] air-conditioning-equipment maintenance,[8] industries which manufacture chrome compounds, and tanning, photographic, and lithographic industries.[9] Dermatitis has been reported from exposure to chrome steel plate.[10]

Epidermal hypersensitivity, as the result of industrial contact with chromates, occurs in a fairly high percentage of exposed workers. One source reported as high as "27 per cent of workers who come in contact with chrome compounds were affected with eczema." [11] Another investigator found that approximately 4% of the group of employees who were exposed to various concentrations of chromate compounds were patch-test positive to this material.[8] Hall [7] states that, "Sensitivity develops after a comparatively long period of exposure. Once developed, it tends to increase rather than decrease in severity." He adds, "It is obvious, therefore, that preemployment patch testing to reduce the incidence of dermatitis due to the substance would be worthless." We wish to emphasize these points because, with the widespread use of diesel locomotive power, the number of men exposed to the chromate compounds is rapidly increasing.

PRESENT PROBLEM

The diesel locomotive radiator fluid in question is prepared from a powder with the following formula: 66% sodium bichromate, 24% soda ash, 5% disodium phosphate, and 5% sodium silicate. It is used in diesel railroad locomotives and in some stationary units to prevent corrosion in the cooling system. Approximately 1½ lb. (0.68 kg.) of the powder is dissolved in 2 gal. (7,500 cc.) of water in an open pail. This produces a solution of about 6% sodium bichromate. This concentrated solution is poured into the radiator of the locomotive, which is then filled with water to its capacity of approximately 210 gal. (800,000 cc.), giving a final concentration in the radiator fluid of about 0.08% bichromate solution.

The present mechanical arrangement of the diesel locomotive makes it difficult both to fill and to drain the radiator without contaminating the adjacent parts of the locomotive and splashing the solution on those handling it. Any leakage in the cooling-system pump, radiator, or engine jacket will soil the floor and other parts of the locomotive. The chromate-containing dirt is then tracked onto the platform of the work area. The employees who prepare and transfer the concentrated powder and solutions usually receive the heaviest exposure to the chromate compounds, but anyone engaged in cleaning or repairing the locomotive motors, or the shop area, is exposed to lesser concentrations.

The following measures are suggested as aids in reducing the hazard of contact with the chromate salts:

1. The recommended mechanical protective devices —such as rubber gloves, rubber boots, waterproof aprons and sleeves, and protective creams—should be used by those handling chromate compounds in the dry state or the various solutions. They should also be particularly careful to avoid spilling this material, thereby contaminating the locomotives and the general shop area with the chromate compound.

2. Those persons working on diesel locomotives who have been found sensitive to chromate should immediately be transferred to other work so that further contact with the substance can be entirely eliminated.

3. Leaks in the radiator system should be repaired promptly by those properly protected, and the contaminated area thoroughly washed. All parts of the radiator and motor exposed to the chemical should be thoroughly washed to remove any remaining chromate before these parts are transferred into the shop area.

4. Some substance without such sensitizing properties should, if possible, be substituted for the sodium-bichromate solution in the radiator fluid. Failing this, the equipment should be redesigned to effect a minimal amount of spilling of the solution both in filling and in draining the diesel locomotive radiators.

SUMMARY

Attention is called to chromate dermatitis resulting from contact with diesel locomotive radiator fluid as a hazard of growing importance in the railroad industry because of the increasing use of diesel locomotives. A report of a case of typical chromate dermatitis resulting from contact with this fluid is presented. The factors contributing to the problem and suggestions for its solution are presented.

213 W. Avenue G (Dr. Walsh).

6. Schwartz, L., (Bethesda, Md.), in Dunn, J. E.: Dermatitis Occurring in a Woolen Mill, Indust. Med. **11**: 432, 1942.

7. Hall, A. F.: Occupational Contact Dermatitis Among Aircraft Workers, J. A. M. A. **125**: 179 (May 20) 1944. Ellis, F. A.: Occupational Dermatoses in Aircraft Workers: Chromate Dermatitis, Occup. Med. **2**: 452, 1946.

8. Schwartz, L., and Dunn, J. E.: Dermatitis Among Operators of Air-Conditioning Equipment, Indust. Med. **11**: 375, 1942.

9. Schwartz, L., and Tulipan, L.: A Textbook of Occupational Diseases of the Skin, Philadelphia, Lea & Febiger, 1939.

10. Harris, M. C.: Contact Dermatitis Due to Contact with Chrome 17 Per Cent Steel Identification Tags of the United States Navy, J. Allergy **16**: 299, 1945.

11. Use of Bichromates in Printing, Foreign Letters, J. A. M. A. **97**: 1088 (Oct. 10) 1931.

PERFORATED DUODENAL ULCER FOLLOWING SNAKEBITE

James J. Bulger, M.D.
and
A. K. Northrop, Jr., M.D., Great Falls, Mont.

Peptic ulcer in infancy, with or without perforation, is no longer considered rare.[1] Snakebite as the precipitating cause of the ulceration has not, as far as we are aware, been previously reported. About 2,000 venomous snake bites occur yearly in the United States. We are therefore reporting this case as a sequela to be watched for.

REPORT OF CASE

L. L., a 22-mo.-old girl, was brought the emergency room of the hospital about 45 min. after having been struck by a rattlesnake in each leg. In the excitement the snake had not been killed for identification of type. The presence of a neurotoxin in the venom was, however, made apparent by the high degree of

From the Departments of Medicine and Surgery, Columbus Hospital.

1. Holt, L. E.: Duodenal Ulcers in Infancy, Am. J. Dis. Child. **6**: 381 (Dec.) 1913.

V 14
1951

central nervous system stimulation. The child's back was arched, her musculature hypertonic. The bowels had moved and respiration was difficult. There were fine to medium coarse, moist rales heard throughout both lungs. She did not recognize persons in her surroundings. The eyes were rolled up, and clonic and tonic convulsive movements were regular.

Immediate treatment consisted of oxygen inhalation, suction of respiratory tree secretions, intravenous thiopental (pentothal®) sodium, dilution of the toxin with isotonic sodium chloride solution intravenously, and the injection of antivenin in large amounts. Continuous suction was applied to the wounds that had been opened in cruciate fashion as a first-aid measure by a neighbor directly after the bite. The tourniquets placed above the wounds at that time were left in place, being released only every 20 to 30 min. for a half minute. About three hours after admission the child's condition had improved enough to allow her transfer to the pediatric floor. The regimen instituted earlier was continued. Under such supportive treatment the child appeared to be out of immediate danger within 24 hr. During the first day of the illness the child's bowels were overactive, 15 bowel movements occurring in the first 24 hr., all of them liquid. Thereafter the stool became soft brown, and flatus was expelled freely. The abdomen by this time had become soft and was not distended. A bland diet was then prescribed and was taken fairly well. In the next 24 hr. there were three bowel movements. The condition of the child continued to improve until the third day, when vomiting began. The abdomen gradually became distended.

Obstipation ensued. By the fourth day the abdomen was swollen with gas and quite hard. The general condition worsened. The child became listless. An x-ray of the abdomen showed a very large amount of free gas beneath the diaphragm. Immediate operation was decided upon. The child was given plasma and blood intravenously. When the peritoneal cavity was opened a large amount of cloudy serous fluid was found to be present throughout. A perforation about 3 mm. in diameter was noted on the superior and slightly posterior aspect of the first portion of the duodenum. Despite the extremely critical condition of the infant, which necessitated transfusion of the blood under pressure, the operation was continued. The perforation was obliterated by means of an overlay omental graft. The abdomen was closed by means of six interrupted through-and-through heavy nonabsorbable (silk) sutures. The child was returned to her room in critical condition. The postoperative care of the patient was similar to that used in most cases of perforated peptic ulcer. The child continued to make satisfactory progress and was discharged from the hospital on the 18th day after admission.

This case derives its interest from the fact that peptic ulcer developed in a child who had been in excellent health from birth and that it ruptured within four days after she was bitten twice by a rattlesnake. The causal connection between the two events seems to be reasonably certain. The sequence reminds us of the cases of duodenal ulceration that we have seen following severe burns. The great amount of nervous irritability demonstrated in this child's behavior leads us to the assumption that ulceration was produced through the mediation of the central nervous system. This is in keeping with presently accepted concepts.[2] When persons are victims of snakebites and particularly when behavior of the patient suggests that much of the venom is of the neurotropic sort (especially when it is a young child who has been bitten so that the concentration of venom is very high in the small body), the clinician should be on the alert for signs of ulceration in the gastrointestinal tract. When such ulceration does occur, perforation may be anticipated.

Medical Arts Building.

2. Wolf, S., and Wolff, H. G.: Evidence on Genesis of Peptic Ulcer in Man, J. A. M. A. **120**: 670 (Oct. 31) 1942.

PERFORATED EAR DRUM FOLLOWING HOME PERMANENT WAVE

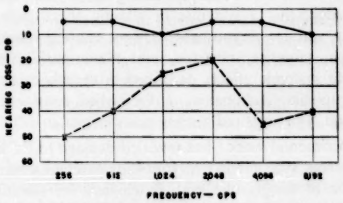
Joseph Sataloff, M.D.
and
John F. Wilson, M.D., Philadelphia

This case is reported because of the widespread use of the advertised home permanent lotions. It may prove to be a unique case. On the other hand, it may stimulate the reporting of other similar experiences.

REPORT OF A CASE

Twenty-four hours prior to being examined, M. M., a woman, 53, was giving herself a home permanent wave of popular brand, which she had used on previous occasions. Following the directions, she applied the neutralizer to her hair, to arrest the action of the waving lotion. Some of the neutralizer ran into her left ear canal, and immediately she became aware of a sharp burning sensation, which ceased after water was applied in the ear. Several minutes later, she noted a sensation of fulness and crackling in the left ear and some loss of hearing.

During the examination, the patient complained of residual fulness and hearing loss in the left ear. There was no history of rhinitis or previous aural infection. The referring physician indicated that this patient had been recently examined without any



Audiogram of patient in case reported. Hearing in right ear is indicated by the continuous line; that of left ear by the broken line.

evidence of perforation or pathological change in the tympanic membranes. The patient denied having vertigo or tinnitus.

Examination revealed a normal condition of the nose and throat. The nasopharynx was clear, and both tori and eustachian openings were free from edema or inflammation. The right ear drum head was normal in appearance. The floor of the left aural canal showed mild injection. There was an extensive anterior, inferior marginal perforation, extending backward to the malleus. The posterior edge of the perforation was injected and slightly edematous, showing recent irritation. The remaining portion of the drum head was not involved. The visible mucosa in the middle ear showed slightly injected vessels with mild edema. There was no otorrhea or unusual tenderness in the ear. The audiogram (see figure) revealed normal hearing acuity in the right ear and a conductive loss in the left ear. The hearing loss in the left ear has changed very little during the past six months. No infection has appeared in the middle ear, but there is only slight indication of any healing of the perforation, despite repeated efforts to stimulate closure. Hearing in the right ear is normal.

COMMENT

There is strong evidence that this perforation was the result of the erosive effect of the waving lotion. Some of this chemical apparently seeped into the ear and came

From the Section of Audiology, Department of Otolaryngology, Hospital of the University of Pennsylvania, and the Department of Dermatology, Jefferson Medical College.

into prolonged contact with the ear drum, causing an erosive perforation. When the neutralizer was applied to the hair, some of the chemical entered the middle ear through the perforation and caused the burning sensation. If the caustic chemical actually has the capacity to destroy tissue, as in this case, its dangers should be clearly emphasized and brought to the attention of the public.

Following the report of a fatality [1] after the application of a wave solution containing ammonium sulfide to a woman having a permanent in a beauty salon, solutions containing this chemical have been almost abandoned. Many of the more popular home wave solutions contain thioglycolate,[2] which is much less toxic. Nevertheless, a number of cases have been reported, most of them in hairdressers employed in beauty parlors, who come into more or less constant contact with such lotions, in which various symptoms have developed that could be attributed to these agents. According to present information, the lesions consist chiefly of a primary irritation of the skin about the scalp, neck, and ears. Pustular lesions about the hair roots, transitory baldness,[3] and eczematous eruptions have also been described, as well as a breaking down of x-ray burns and preexisting scar tissue.[4] Symptoms suggesting a systemic or allergic effect included rhinitis, vertigo, nervousness, cramps, nausea, vomiting, dyspnea, jaundice, nocturia, and albuminuria. Other possible systemic effects described in certain cases include anemia, leukopenia, a diminished resistance to infection, and impaired healing power.

Experimental work [5] has revealed damage to the central nervous system and liver following parenteral administration of thioglycolic acid. Patch tests for sensitivity to thioglycolic acid have proved unreliable, although positive results have been obtained in some cases in which lesions were present. It has been suggested that sensitivity might be due to the combined effect of softener, fixer, and keratin.[6] The development of sensitivity is, of course, unpredictable. Also the previous use of depilatories containing a sulfide radical has been suspected as contributing to the effect. Positive results of the cephalin flocculation test have been demonstrated in some cases.

Assistants in beauty parlors have been instructed to wear rubber gloves for protection. One serious case followed exposure to thioglycolate solution over a long period. An itching eruption developed, and the body was covered with excoriations. Scars on the abdomen from previous laparotomies became infected and led to a spreading gangrenous necrosis of the abdominal wall, which responded to treatment only after prolonged and serious illness.[7] For this reason permanent wave operators have been warned to avoid contact with these solutions if they are anemic or suffering from open cutaneous lesions or infections of any kind. Naturally, carelessness in following directions enclosed for the application of home permanents cannot be blamed on the product, manufacturers, or distributors. Hitherto, the ill effects reported have been of a more or less harmless and transitory nature.

The present case, occurring in a woman applying a home permanent, differs from those hitherto reported, first, because of the apparently permanent damage inflicted and, second, because of the involvement of an important organ, not hitherto reported as affected by the lotion, namely, the ear drum. This woman probably faces permanent loss of hearing in the left ear as the result of using a nationally advertised home wave solution.

At present, the instructions issued with this particular brand of permanent include a double application of neutralizer to the curls at intervals and a final rinsing with the neutralizer after still another interval. If these instructions were properly carried out, it seems unlikely that any wave solution in sufficient concentration to cause damage could have flowed into the ear with the neutralizer. Moreover, the time of exposure would seem less than that required for a tissue-damaging effect.

Nevertheless, since cases of hypersensitivity to thioglycolate have been reported, as well as peculiar blood changes with diminished resistance to infection and retarded healing, it would seem wise that instruction pamphlets issued with home permanent sets bear a warning for special precautions to protect the eyes and ears from contact with all solutions and to postpone the waving process if any open cutaneous lesions, excoriations, or infections are present.

It is of the utmost importance that isolated cases of injuries due to cold wave lotions be promptly and meticulously reported, not only because of the increased popularity of home permanents, but because the exact nature of the toxic effects of these solutions has not yet been fully confirmed, and until the actual responsibility of their ingredients has been demonstrated, it will be impossible to enforce measures forbidding their use and sale and to insure proper labeling and directions for the protection of the public.

1721 Pine St.

V 14
1951

1. Bunce, A. H.; Parker, F. P., and Lewis, G. T.: Accidental Death from Absorption of Heatless Permanent Wave Solution, J. A. M. A. **116**: 1515 (April 5) 1941.

2. McCord, C. P.: Physiologic Properties of Thioglycolic Acid and Thioglycolates, Indust. Med. **15**: 669 (Dec.) 1946; Toxicity of Thioglycolic Acid Used in Cold Permanent Wave Process, Correspondence, J. A. M. A. **131**: 776 (June 29) 1946. Lehman, A. J.: Health Aspects of Common Chemicals Used in Hair-Waving Preparations, Report to the Committee on Cosmetics, J. A. M. A. **141**: 842 (Nov. 19) 1949. McCord, C. P.; Stofer, B. E., and Williams, P.: Action of Thioglycolic Acid and Thioglycolate on Animals After Subcutaneous Introduction, Indust Med. **16**: 62 (Feb.) 1947.

3. Reiches, A. J., and Lane, C. W.: Temporary Baldness Due to Cold Wave Thioglycolate Preparations, J. A. M. A. **144**: 305 (Sept. 23) 1950.

4. Cotter, L. H.: Thioglycolic Acid Poisoning in Connection with "Cold Wave" Process, in Clinical Notes, Suggestions and New Instruments, J. A. M. A. **131**: 592 (June 15) 1946.

5. Reiss, F., and Gerstl, B.: The Systemic and Local Effects of Thioglycolic Acid and Bisulphite Compounds, Exper. Med. & Surg. **4**: 338 (Nov.) 1946.

6. Goldman, L.; Mason, L., and McDaniel, W.: Permanent Wave Process: Clinical Report with Special Reference to Effect of Ammonium Thioglycolate on Skin, J. A. M. A. **137**: 354 (May 22) 1948.

7. Simeone, F. A., and Hardy, H. T.: Chronic Progressive Infectious Gangrene of Skin: Patient with Exposure to Cold Wave Solution, Ann. Surg. **128**: 1112 (Dec.) 1948.

TYPHOID

REPORT OF A CASE WITH THREE ATTACKS IN ONE YEAR

William P. Frank, M.D., Alhambra, Calif.
Albert G. Bower, M.D., Pasadena, Calif.
and
Jack Chudnoff, M.D., Los Angeles

Several instances of a relapse in typhoid after cessation of chloramphenicol (chloromycetin®) therapy have been reported, and possibly chloramphenicol interferes with the development of lasting immunity. Although second attacks of typhoid have been reported, we have not found any other instance in which a patient had three attacks in one year. We believe that chloramphenicol was life-saving for this patient but interfered with the development of immunity. To test this hypothesis we began to immunize him with an autogenous vaccine after he had recovered from the third attack.

REPORT OF A CASE

R. B., a 32-year-old Negro man, was admitted to the acute disease unit of the Los Angeles County Hospital on Jan. 29, 1950, with a history of chills, fever, headache, anorexia, and cardiac palpitation for five days. Physical examination revealed only a temperature of 103 F., tachycardia, and a white blood cell count of 8,400, with 80% polymorphonuclears and 20% lymphocytes. On Feb. 1, the eighth day of the disease, the laboratory reported culture of the blood taken on admission was positive for Salmonella typhosa (type not determined). The patient was then transferred to the communicable disease unit, and chloramphenicol [1] therapy was instituted immediately. The chloramphenicol dosage was calculated on the basis of 60 mg. per kilogram of body weight per day; 1.6 gm. was given hourly for three doses, followed by 850 mg. every four hours. The temperature fell gradually to 99.2 F. on the fourth day, and on the eleventh day of the disease the intestine was perforated. At operation a dime-sized perforation was found in a Peyer patch 10 in. (25 cm.) from the ileocecal valve; two other Peyer patches with very thin-walled ulcerations were found. The perforation was repaired and the two ulcerated areas sutured.

The postoperative course was very stormy, and it was 19 days before the critical period passed. During that time the patient was subjected to a veritable barrage of antibiotics. He received chloramphenicol for 42 successive days by all routes, rectally, intravenously, and orally. Chloramphenicol was given intravenously for 10 days as a 30% solution in propylene glycol, 11 ml. every four to six hours. He was given streptomycin intramuscularly for 18 days, 2 gm. daily for 8 days and 1 gm. daily thereafter. He was given 1,000,000 units of penicillin every six hours for 18 days. He was given aureomycin intravenously for two days in doses of 100 mg. every six hours. In addition the patient received intravenously isotonic sodium chloride solution, 5% dextrose solution, potassium chloride, amino acids, vitamins, plasma, and blood.

The laboratory was used unsparingly for repeated determinations of serum potassium, sodium, chlorides, carbon-dioxide combining power, albumin, globulin, and nonprotein nitrogen levels.

A suction tube was passed into the upper small intestine to combat ileus and was used for 17 days.

The patient gradually recovered and was finally discharged on March 27 after having been afebrile 32 days and without any therapy 12 days.

On May 17, 51 days later, the patient presented himself to the hospital of his own accord with a history of fever, headache, and epigastric soreness of three days' duration. Pertinent physical findings were a temperature of 101.2 F. and an injected pharynx and conjunctiva. The white blood cell count was 6,600, with 86% polymorphonuclears. The next day the laboratory reported a Gram-negative motile rod growing in the blood culture taken on admission. This subsequently proved to be S. typhosa, type E.

Chloramphenicol was again given in a dosage of 60 mg. per kilogram of body weight per day after the usual priming dose, and four days later the patient became afebrile. The antibiotic was given for 21 successive days. The patient was discharged June 22 after having been afebrile 31 days and without treatment 14 days.

The patient reentered the hospital 207 days later, on Jan. 15, 1951, with a febrile illness of three days' duration. There was slight abdominal tenderness, an injected pharynx, and temperature of 103 F. The white blood cell count was 3,800. The next day the laboratory reported a Gram-negative motile rod growing in the blood culture taken on admission, and this again proved to be S. typhosa, type E.

Chloramphenicol was started on Jan. 16 and continued 16 days. The patient became afebrile on the fourth day thereafter and was discharged on Feb. 15 after having been afebrile 27 days and off treatment 2 weeks. Before discharge he was given his first injection of an autogenous typhoid vaccine.

COMMENT

This case is noteworthy in a number of respects: the early diagnosis and treatment, the prompt response to chloramphenicol, the early intestinal perforation during apparently successful therapy, the recovery following perforation, the duration and mode of administration of chloramphenicol, and the occurrence of three attacks of typhoid in one year.

1. Early diagnosis and treatment. The diagnosis was made and chloramphenicol therapy started on the eighth day of the disease in the first attack and on the fourth day of the second and third attacks.

2. Prompt response to chloramphenicol. In each instance the patient became afebrile on the fourth day of therapy.

3. Intestinal perforation very early in the disease and during apparently successful therapy. The patient's intestine was perforated in his first attack on the eleventh day of the disease just as he became afebrile.

4. Recovery after perforation. Though 30 to 50 patients with typhoid are treated here annually, this patient is the first in this hospital to recover after operation. Undoubtedly, prompt surgery plus assiduous postoperative care with the lavish use of nurses, antibiotics, and blood chemistry studies were responsible. In the effort to save this man's life over $5,000 was spent (basic hospital cost $17.97 a day on June 1, 1950).

5. The duration and mode of administration of chloramphenicol therapy. The patient received chloramphenicol for 42 successive days on his first admission, 21 days on his second, and 16 days on his third. It was given intravenously in propylene glycol postoperatively for 10 days after it became apparent that chloramphenicol was not absorbed rectally during paralytic ileus.

6. Three attacks of typhoid in one year. The patient was afebrile 80 days between the first and second attacks and 235 days between the second and third. We have found nothing comparable in a search of world literature on this disease. Relapse in typhoid is not uncommon, but before the advent of chloramphenicol a relapse after

From the Communicable Disease Unit of the Los Angeles County Hospital and the University of Southern California Medical School, Los Angeles.

1. The chloramphenicol was supplied by F. M. Callender of Parke, Davis and Company.

two weeks of normal temperature was rare. Second attacks of typhoid have been recorded, but as a rule immunity is lifelong upon recovery from the disease. Many instances of relapse one to two months after cessation of chloramphenicol therapy are being reported in the literature. The drug must interfere with development of immunity. It is not clear in this case whether the patient's second and third admissions were relapses or new attacks. His wife, whom he had married recently, was a known carrier of S. typhosa, type E. However, the implication is quite clear that chloramphenicol, though it may be lifesaving, may interfere with the development of lasting immunity by the patient. This may be true more particularly when therapy is started very early in the disease, as it was in this case. Believing chloramphenicol to be the inhibiting factor, we have started to immunize this man with an autogenous vaccine. Further observation will be necessary to test the efficacy of this approach to therapy.

SUMMARY

A unique case of typhoid with three attacks in one year is reported. Eighty days elapsed between the first and second attacks and 235 days between the second and third. The patient suffered an intestinal perforation during his first illness. He was treated with chloramphenicol for 42 days, 21 days, and 16 days, respectively, on his three successive admissions. Attention is called to the probability that chloramphenicol interferes with development of adequate immunity upon recovery. The use of typhoid vaccine after a suitable interval without chloramphenicol treatment is suggested.

ADDENDUM

Since this report was written seven additional patients with typhoid have been treated with typhoid vaccine after apparent cure with chloramphenicol. To date there have been no recurrences.

1422 S. Garfield Ave. (Dr. Frank).

HOMOLOGOUS SERUM HEPATITIS

CASE FOLLOWING ADMINISTRATION OF IRRADIATED HUMAN MUMPS IMMUNE SERUM

L. A. Lodmell, M.D., Portland, Ore.

The hazard of the administration of biologic preparations parenterally has been demonstrated by the recent reports [1] of several cases of homologous serum hepatitis following the use of irradiated human plasma. The following is a report of a case of homologous serum hepatitis which resulted from the administration of irradiated human mumps immune serum.

Mumps immune serum was first used by Hess [2] in 1915 and has been used sporadically since that time with equivocal results. Beeson and associates [3] and Neefe [4] have published the only reports of hepatitis following it use; the cases reported by the former occurred in an army hospital in World War II, and a single case was reported by the latter in 1946.

REPORT OF CASE

A 43-year-old white man received 40 cc. of irradiated human mumps immune serum for prophylactic purposes on June 10, 1950, because his son, aged 4, had contracted mumps.

The patient began having symptoms of anorexia and diarrhea about Aug. 15, 1950, which he attributed to fatigue and nervousness. When he reported at my office on Sept. 7, he had noted that for several days his urine had been dark-colored. His chief complaint at this time was extreme fatigue, and he stated that he had been sleeping a great deal more than usual. There had been no elevation of temperature. His weight loss was approximately 10 lb. (4.5 kg.). There was no history of recent contact with anyone having jaundice or of the use of any chemicals which might have caused parenchymal liver damage. He had never been jaundiced in the past. Mumps did not develop.

On physical examination the sclerae were obviously jaundiced. The liver was not enlarged, though there was marked tenderness on palpation. The spleen was not enlarged. The remainder of the physical examination was noncontributory.

Roentgen examination of the stomach and duodenum was entirely normal. A cholecystogram did not reveal the presence of calculi or a shadow and was interpreted as showing a nonfunctioning gallbladder.

Laboratory studies were as follows: The sulfobromophthalein (bromsulphalein®) sodium test showed a 50% retention of the dye in 45 minutes. The total direct and indirect Van den Bergh reaction was 5.9 mg. per 100 cc.; the immediate direct reaction was positive. The icterus index was 19. The 24-hour urine specimen revealed 15.75 mg. of urobilinogen. The thymol turbidity was 23.5 units. The cephalin flocculation was 4+ in 24 hours. Total protein was 6.8 gm., with the albumin 3.9 gm., and globulin 2.9 gm. The blood count was as follows: hemoglobin, 14.86 gm.; red blood cells, 5,540,000; white blood cells, 4,300; polymorphonuclear neutrophil leucocytes, 49; eosinophils, 3; basophils, 2; staff cells, 2; monunuclear cells, 2; small lymphocytes, 42. The sedimentation rate was 10.5 in 45 minutes. The urine showed the presence of bile but was otherwise normal.

At this writing, the patient has been in bed at home for the past month and is greatly improved. The jaundice evident in the sclerae has cleared. He has regained the weight lost early in his illness. The liver is no longer tender. The thymol turbidity at the present time is 8.5 units, the cephalin flocculation, 4+ in 48 hours, and the icterus index is 11.

The treatment used was that of measured diet: 140 gm. of protein; 350 gm. of carbohydrate, and fatty foods as tolerated, daily. In addition to this he was given daily 3 oz. (90 gm.) of meritene,® 16 tablets of Brewers' yeast, each 6.8 grains (408 mg.), and two "therapeutic formula" (Squibb) vitamin capsules.

Representatives of the commercial laboratory from which the serum was obtained stated in their correspondence that the serum was processed in the usual manner from serum donations of adults in good health. The serum was processed according to requirements of the Biologics Law, which includes treating the serum with ultraviolet radiation. They also stated that this was the first instance of hepatitis resulting from the administration of their human mumps immune serum.

Homologous serum hepatitis occurs in 1.5% of patients receiving plasma from small pools and in 4.5% to

From the Department of Internal Medicine, University of Oregon Medical School.

1. Rosenthal, N.; Bassen, F. A., and Michael, S. R.: Probable Transmission of Viral Hepatitis by Ultraviolet Irradiated Plasma: Report of 3 Cases, J. A. M. A. **144**: 224 (Sept. 16) 1950. Barnett, R. N.; Fox, R. A., and Snavely, J. G.: Hepatitis Following Use of Irradiated Human Plasma, ibid. **144**: 226 (Sept. 16) 1950. James, G.; Korns, R. F., and Wright, A. W.: Homologous Serum Jaundice Associated with Irradiated Plasma: Preliminary Report, ibid. **144**: 228 (Sept. 16) 1950.

2. Hess, A. F.: Protective Therapy for Mumps, Am. J. Dis. Child. **10**: 99 (Aug.) 1915.

3. Beeson, P. B.; Chesney, G., and McFarlan, A.: Hepatitis Following Injection of Mumps Convalescent Serum: Reports from American Red Cross—Harvard Field Hospital Unit; Use of Plasma in Mumps Epidemic, Lancet **1**: 814 (June 24) 1944.

4. Neefe, J. R.; Miller, T. G., and Charnock, F. W.: Homologous Serum Jaundice: Review of Literature and Report of Case, Am. J. M. Sc. **207**: 626 (May) 1944.

V 14
1951

12% of patients receiving plasma from large pools.[5] This disease has a considerable morbidity and mortality rate in comparison with the relatively benign nature of mumps complications. In view of these facts it must be realized that there is a calculated risk that the person receiving human mumps immune serum may develop homologous serum hepatitis.

ADDENDUM

The patient is now clinically well. Two more cases of homologous serum hepatitis folowing the administration of mumps immune serum have come to my attention. These cases occurred simultaneously with the above reported case.

812 S.W. Washington St.

5. Neefe, J. R.: Viral Hepatitis: Problems and Progress, Ann. Int. Med. 31: 857 (Nov.) 1949.

NEW NEEDLE DEVICE FOR REPEATED BLOOD WITHDRAWALS

Alfred L. Copley, M.D., New York

In the course of studies that made it necessary to remove blood samples from the same venipuncture at frequent intervals, we employed a commonly-used type of needle, containing a stylet that occludes its bore. However, in using this device, we frequently found that the bore of the needle was not patent after removal of the stylet.

In an effort to find out the cause of this obstruction, the femoral vein was examined in dogs while the needle was in situ, revealing that a clot occasionally formed at the tip of the needle.

To overcome this obstacle, the new feature of our device permits the stylet to extend about 2 mm. beyond the tip of the needle. The tip of the stylet should be well

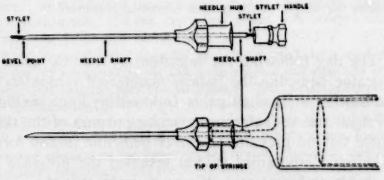


Diagram of needle device for repeated blood withdrawals.

rounded off. When the stylet is removed, any clot which may have formed at its end would not occlude the tip of the needle. Should a clot form at the bevel of the needle or at the end of the stylet, it can be detached by alternate withdrawals and insertions of the stylet.

Another feature of this new needle device is that it allows the shaft of the needle to extend about 2 to 3 mm. beyond the rim of the hub. This arrangement was necessitated in order to eliminate the possibility of coagulation of blood in the hub of the needle, which could obstruct the lumen. The outer diameter of the needle shaft, which extends beyond the rim of the hub, must be smaller than the inner diameter of the tip of the syringe to be employed. Thus, this part of the needle can enter the tip of the syringe with ease, and the outer walls of the tip of the syringe can be closely approximated to the inner wall of the hub of the needle.

A diagram (Figure) of this new needle device, used successfully by us for the past six years, illustrates two features which appear to be an improvement over the older device in general use.

New York Medical College, New York 29.

PURPURA AND NEPHRITIS AFTER ADMINISTRATION OF PROCAINE PENICILLIN

Maxwell Spring, M.D., New York

Since the introduction of penicillin into therapeutics, various toxic reactions have been reported following its use.[1] Purpura and nephritis are two of the least common of these reactions. The association of purpura and nephritis is very unusual. Anderson [2] reported the only instance of this kind. In his case the purpura was manifested by bleeding from the gastrointestinal tract. The toxic reaction to be described is, to my knowledge, the first instance in which skin purpura, nephritis, and the nephrotic syndrome followed the use of procaine penicillin.

REPORT OF CASE

N. J., a white man aged 53, was admitted on May 1, 1948, to the Bronx Hospital, on the medical service of Dr. Max Weiss, for generalized muscle pains and purpura of eight days' duration. On April 9 he had scraped his left fourth interphalangeal joint on the floor of a pier. The abrasion became infected and on April 21 his family physician gave him 300,000 units of procaine penicillin intramuscularly. The infection responded to the antibiotic. However, on the day following the injection of penicillin epigastric pain developed. The pain disappeared the next day but recurred on the following day, April 24.

On April 27 the patient began to vomit. The vomiting lasted three days and on April 30 abdominal cramps and diarrhea also developed.

On April 23, two days after the injection of penicillin, a purpuric eruption appeared on the ankles, feet, and abdomen. This faded almost completely in three days. But on April 29 a similar rash reappeared and covered the entire body except for the trunk. The hands and legs became swollen. The patient had a temperature range between 100 and 101 F. during this period.

The patient's past history revealed nothing significant. He had never received penicillin previously nor did he reveal any evidence of epidermophytosis.

Physical Examination.—On admission he was acutely ill. The temperature was 100.4 F. and the pulse rate 120 beats per minute. He was unable to move because of painful muscles and joints. The pertinent physical findings were as follows: blood pressure was 150/80; the abdominal muscles were voluntarily spastic; the liver edge was palpable 3 fingerbreadths below the costal margin, the spleen and kidneys were not felt; the fingers were swollen, and there was edema of the legs; the skin revealed a purpuric eruption over the entire body except for the trunk; in some areas the purpuric spots were confluent and vesicular on the wrist and face. The patient was unable to straighten out his legs. There was generalized muscle tenderness. The joints were painful on motion but not swollen. The neurological findings were within normal limits.

From the Medical Service, the Bronx Hospital.

Dr. Harry Wessler, director of medicine, and Dr. Max Weiss, attending physician, gave permission to report this case, and Dr. Daniel C. Belden supplied the follow-up data.

1. Morginson, W. J.: Toxic Reactions Accompanying Penicillin Therapy, J. A. M. A. 132: 915 (Dec. 14) 1946.

2. Anderson, A. B.: Anaphylactic Purpura Following Intramuscular Penicillin Therapy, M. J. Australia 1: 305 (March 8) 1947.

The initial laboratory examinations revealed 3,200,000 red blood cells, a hemoglobin value of 70% (10.2 gm. Sahli) and a white blood cell count of 17,050 with 74 polymorphonuclear leucocytes, 10 band forms, 8 lymphocytes, and 8 monocytes on differential smear. The urine had a specific gravity of 1.014. It contained 1+ albumin and a trace of glucose. On microscopic examination 10 to 20 white blood cells were present per high power field. Both Wassermann and Kahn tests were negative.

The initial impression was that the patient had a meningococcic septicemia.

Course.—The temperature returned to normal within two days and remained so, with an occasional rise to 100 F., until the patient's discharge. During the first three weeks of hospitalization the pulse rate ranged between 90 and 100, and thereafter between 80 and 90.

Since the patient was thought to have a meningococcic septicemia, a spinal tap and blood culture were done and sulfadiazine was administered. The blood culture was sterile after six days' incubation. The spinal fluid was clear and under moderately increased pressure. Direct smear was negative, and the culture was sterile after 48 hours' incubation. The total protein was under 10 mg. per 100 cc. When no response was obtained after 10 days, sulfadiazine was discontinued. On May 3, the third hospital day, the blood glucose was 133 mg. per 100 cc. and nonprotein nitrogen 62 mg. per 100 cc. The swelling of the hands had subsided by the sixth hospital day (May 6). On this date a Trichinella skin test was negative. The next day the attending dermatologist (Dr. Charles Greenhouse) saw the patient in consultation. He felt that the eruption was septic in nature and advised blood agglutination studies. Agglutinations against Salmonella typhosa, S. paratyphi and S. schottmülleri, Brucella abortus, Proteus OX19 and Pasturella tularensis were performed on May 7, and reported as negative. The department of health of New York City performed special Meningococcus agglutination studies on the patient's blood. The results of these studies were negative. On May 8, a penicillin patch test was negative, and a new crop of hemorrhagic blebs was noted around the elbows and knees. On the 10th hospital day (May 10), an x-ray of the chest showed pleural thickening, and only slight muscle tenderness was present. The total protein was 4.2 gm. and the albumin-globulin ratio inverted (albumin 1.8 gm., globulin 2.4 gm.); the blood nonprotein nitrogen was 69.2 mg. per 100 cc.; and a second blood culture was sterile after six days' incubation. A hemogram revealed 66% hemoglobin (9.6 gm. Sahli), 3,010,000 red blood cells, and 6,250 white blood cells with 60% polymorphonuclear cells, 1 band form, 35 lymphocytes, and 4 monocytes. The platelets numbered 280,000; the bleeding time was 4.2 min. and coagulation time 4 min. The next day 2+ edema of the ankles was noted, and a new crop of vesiculopapular lesions appeared on the elbow creases and legs. An electrocardiogram was made and was interpreted as being within normal limits. The spleen was not palpable. A smear and culture from the hemorrhagic bullae revealed no organisms. The patient was given tripelennamine (pyribenzamine®). When the eruption increased, Dr. Greenhouse again was called to see the patient on May 13. He believed the eruption was caused by erythema multiforme bullosa hemorrhagica, possibly on a meningococcic septicemic basis. On the same day, Dr. Joseph Felsen made a sigmoidoscopic examination. The sigmoidoscope was passed a distance of 25 cm. At 10 cm. a single purpuric spot was seen on the anterior wall. He believed that the patient had a sporadic seeding of the blood stream with cocci, and that if blood cultures were taken when fresh crops of lesions appeared on the skin the presence of bacteria could be demonstrated. His diagnosis was purpuric lesions of the bowel secondary to a bacteremia. New petechial lesions appeared on the lower extremities. Tripelennamine was discontinued on May 16 because it had no apparent effect on the eruption. On May 21 there was a recurrence of pain in the patient's arms and legs. His face was puffy and his weight had increased. The hemoglobin was 80% (11.6 gm. Sahli) with 4,000,000 red blood cells. The stool was negative for blood, parasites, and ova. Because of the results of the urinary test (specific gravity range 1.003 to 1.012, albumin, casts, and red blood cells) and blood findings (elevated nonprotein nitrogen), and the presence of generalized edema and weight gain, kidney-function studies were made.

On May 11 a Fishberg concentration test showed that the specific gravity of the urine ranged between 1.006 and 1.012. These figures indicated impaired renal function. The urea clearance was 64%, and Bence-Jones protein was absent from the urine. Two weeks later (May 25), the Fishberg concentration test was repeated. There was no change in the concentrating power of the kidney. The blood pressure was 135/80. The total protein was still low (4.3 gm.) and the albumin-globulin ratio inverted (albumin 2.0 gm., globulin 2.3 gm.). The blood proteins again were determined on June 3, and except for a rise in the total amount, there was no change in the albumin-globulin ratio. However, the nonprotein nitrogen had fallen to normal, 35.2 mg. per 100 cc. and remained within normal limits thereafter. His weight fell from a high of 146¾ lb. (66.6 kg.) on May 17 to 127 lb. (57.6 kg.) by June 10. From May 28 protein hydrolysate (aminosol®) infusions and oral protein hydrolysate (essenamine®) were given. The edema disappeared by June 8 as a result of this therapy. The skin lesions had also disappeared by this date.

On June 4, after his condition had improved sufficiently, allergy testing was performed by the attending allergist, Dr. H. Elias Diamond. With crystalline penicillin G a slightly positive reaction with 5,000 units in 1: 10 dilution, and negative reactions with 500 and 50 units in 1: 100 dilutions were obtained. With procaine penicillin (flo-cillin®), negative reactions were obtained with 30,000 units in 1: 10 dilution; 3,000 units in 1: 100 dilution; and 300 units in 1: 1,000 dilution. No delayed reactions occurred.

On May 11, the patient was discharged from the hospital. The urine on this day had a specific gravity of 1.010 and contained 2+ albumin and many white blood cells, 10 to 15 red blood cells, and 1 to 2 granular casts per high power field on microscopic examination. The final diagnosis was nonthrombocytopenic purpura and glomerulonephritis, both probably caused by penicillin.

Follow-up.—Urine albumin gradually decreased so that by Aug. 16 there was none present. The specific gravity on this date was 1.006, and blood pressure 118/72. On Sept. 13, 1948, a urine examination showed specific gravity 1.012, and no albumin. Blood pressure was 120/80. In October, the blood pressure was 140/72; November, 160/92; December, 175/100; January, 1949, 170/100; February, 168/108, and March, 162/100. Urine examinations in January, February, and March, 1949, showed that the specific gravity ranged between 1.010 to 1.020, albumin 3 to 4+; and on microscopic examination occasional pus cells and casts were found. Throughout Dr. Belden's observations the weight of the patient remained constant.

COMMENT

The day following the injection of 300,000 units of procaine penicillin the patient manifested symptoms in the form of abdominal pains, followed by joint swelling, myalgia, and vesicular and macular purpura of the skin. There was no previous intake of penicillin in any form. Admission laboratory studies revealed the presence of nephritis and azotemia. It was thought that the entire syndrome was the result of a meningococcemia. However, the clinical course and laboratory findings did not support this diagnosis. Kidney function was poor; nevertheless, azotemia disappeared. Three weeks after admission, the nephrotic syndrome developed. This subsided as a result of bed rest and amino acid therapy. Six weeks after the onset of the illness, the purpuric manifestations disappeared completely. Skin testing with crystalline penicillin G and the material responsible for the symptomatology, procaine penicillin G (flo-cillin®), revealed no sensitivity either to penicillin or to the ingredients composing the procaine penicillin mixture. The patient was discharged from the hospital six weeks after admission, and at that time examination of the urine still showed the presence of kidney damage. Two months

V 14
1951

later, Aug. 16, 1948, the abnormal constituents had disappeared entirely from the urine, but the specific gravity remained low. Five months after discharge from the hospital, the blood pressure began to rise, and abnormal constituents again were found in the urine. Nine months after discharge, there were definite evidences of a chronic nephritis. The patient has not been seen since 1949, and the present state of his kidneys is not known.

The clinical picture seemed to be that of a reaction to penicillin, probably anaphylactic in nature. The patient showed the joint symptoms described by Schoenlein and the intestinal crises described by Henoch associated with a toxic nephritis.

SUMMARY

An anaphylactic reaction to procaine penicillin manifested by transient joint swellings, skin purpura, nephritis and azotemia, and the nephrotic syndrome has been presented.

628 E. 141st St.

UNUSUAL REACTION TO AUREOMYCIN

George Gittell, M.D., New York

The administration of aureomycin has been reported to be quite free of serious toxic reactions. Gastrointestinal symptoms are quite disturbing to the patient, but are not dangerous. A case of reaction to aureomycin in which a shock-like state was observed is reported.

REPORT OF CASE

Mrs. H. H., aged 36, was seen on Oct. 12, 1950, complaining of pain in the right chest, cough, nasal obstruction and discharge, and painful swelling of the right foot. Examination showed tenderness over both antrums, scattered rhonchi in both lung fields, and interdigital dermatophytosis of both feet, with secondary infection of the right foot. The patient had a history of chronic sinusitis, with repeated exacerbations during respiratory infections. Aureomycin, 250 mg. every four hours, was ordered, and codeine was prescribed for the pain.

The patient took the drug for three days, making a total of 3.75 gm. of aureomycin. At this time nausea and diarrhea occurred, and she stopped the medication. Her nasal symptoms and the infection of the right foot were much improved. On Oct. 17, 1950, because of a recurrence of pain in the chest, she took 1 capsule of aureomycin (250 mg.). Within a few hours, she noted swelling of the upper lip and eyelids. However, this did not disturb her much, and she slept well that night. On the following morning, while taking care of her baby, the patient suddenly collapsed and fell to the floor.

When the patient was seen on Oct. 18, 1950, she was stuporous, but could be roused. She was able to move her extremities only slightly. She complained of extreme weakness. The blood pressure was 84/50. The pulse was 76 and regular. Deep reflexes were absent. There was no nuchal rigidity or Babinski reflex. Both upper and lower eyelids were edematous, and the left side of the upper lip was swollen moderately. Because of these last findings, it was my impression that this was an allergic reaction, with angioneurotic edema of the face and possibly intracranially. Epinephrine hydrochloride was given, in dosage of 0.3 cc. of a 1:1,000 solution. Fifty milligrams of tripelennamine (pyribenzamine*) was given orally. The blood pressure rose to 90/50 in about 30 minutes, and the patient felt slightly better.

Six hours later the blood pressure was 100/70, and the patient was stronger and less drowsy. Deep reflexes were present. The urine was normal. A blood cell count showed 11,200 white cells, with a normal smear. Polymorphonuclear leucocytes numbered 72%, lymphocytes 28%, with no eosinophiles seen in the smear.

The following day, the patient had generalized urticaria. The deep reflexes were equal and active. Tripelennamine was continued, with relief of the urticaria. From this time on, the patient recovered slowly. Weakness persisted. There were short periods of marked weakness, requiring her to go to bed, during the following week.

The only medicament taken prior to this episode other than aureomycin was codeine, which she has taken often without untoward effect. This patient had been under my care for several years; her blood pressure had previously averaged 110/70. There was a history of edema of the uvula following oral administration of liver, several years before. One of her children had had urticaria following administration of penicillin.

SUMMARY

An unusual reaction in a woman to aureomycin is reported. Accompanying angioneurotic edema and urticaria, there occurred a shock-like state, with hypotension, collapse, weakness, and syncope.

1261 Merriam Ave.

COUNCIL ON FOODS AND NUTRITION

The following products have been accepted as conforming to the rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

Allen Foods, Inc., St. Louis.

LASCO BRAND DIETETIC PACK TUNA. Ingredients: Light meat tuna and distilled water.

Analysis (submitted by distributor).—Total solids 30.6%, moisture 69.4%, protein (N × 6.25) 28.3%, fat (ether extract) 0.75%, carbohydrates (by difference) 0.15%, sodium 40 mg./100 gm.

Calories.—1.22 per gram; 34.6 per ounce.

Use.—A useful adjunct for the planning of low fat, low sodium dietaries.

Clapp's Baby Food Division, American Home Foods, Inc., Rochester, N. Y.

CLAPP'S JUNIOR FOODS—SWEET POTATOES. Ingredients: Sweet potatoes, malt syrup, salt and water necessary for preparation.

Analysis (submitted by manufacturer).—Total solids 15.97%, moisture 84.03%, ash 0.99%, fat (ether extract) 0.04%, protein (N × 6.25) 0.93%, crude fiber 0.51%, carbohydrates other than crude fiber (by difference) 13.82%.

Vitamins and Minerals	Mg./100 Gm.
Carotene	2.03
Thiamine	0.024
Riboflavin	0.072
Ascorbic acid	2.55
Nicotinic acid	0.385
Calcium	14.80
Phosphorus	40.20
Iron	0.72
Copper	0.38

Calories.—0.57 per gram; 16.24 per ounce.

Use.—For use in the feeding of older infants and young children.

Clapp's Baby Food Division, American Home Foods, Inc., Rochester, N. Y.

CLAPP'S JUNIOR FOODS—CUSTARD PUDDING. Ingredients: Sugar, powdered whole milk, cake flour, powdered whole eggs, starch, salt and vanilla.

Analysis (submitted by manufacturer).—Total solids 22.87%, moisture 77.13%, ash 0.85%, fat 0.14%, protein 3.04%, crude fiber 0.08%, carbohydrate (by difference) 18.76%.

Vitamins and Minerals	Mg./100 Gm.
Carotene	0.017
Thiamine	0.017
Riboflavin	0.171
Nicotinic acid	0.114
Ascorbic acid	0.300
Calcium	84.42
Phosphorus	87.42
Iron	0.29
Copper	0.09

Calories.—0.9 per gram; 25 per ounce.

Use.—For use in the feeding of older infants and young children.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Edited by . . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . . "Medic, Chicago"

MENOPAUSAL MUSCULAR DYSTROPHY

One of the types of muscular dystrophy (myopathy) has its onset in the fifth or sixth decade of life. This form of muscular weakness, possibly more common than formerly recognized, is frequently wrongly laid to the general enfeeblement of age, especially since muscular wasting is seldom evident. Unlike the response in other types of myopathy, patients with menopausal muscular dystrophy respond well to the administration of cortisone acetate, although a maintenance dosage is necessary in order to insure continued health.

The disease was clearly recognized in 1950 by Shy and his co-workers [1] in Montreal. Scattered reports of similar disorders are found in the literature, but the Montreal investigators were the first to give a full description of the symptoms and to note the response to cortisone, a reaction that served to differentiate this form of myopathy from all others.

The clinical features have now been more definitely disclosed by Shy and McEachern.[2] In a typical case the weakness begins in the hip and shoulder girdle muscles. This leads to difficulty in ascending stairs or in rising from a chair without help from the arms. The disease progresses (sometimes rapidly, sometimes slowly) to a point where a waddling gait is evident and the patient can no longer climb stairs. There is no complaint of facial weakness, difficulty in swallowing, or double vision; power in the hands and feet remain normal, thus excluding most cases of myasthenia gravis, with which it might be most easily confused. The condition occurs in the postclimacteric period, although there is no proof of gonadal dysfunction. It occurs predominantly in women but may occur in men. Biopsy is necessary to make the diagnosis certain; the pathology is that of dystrophy of muscles, in contrast to atrophy. In four patients treated by Shy and McEachern, response after the use of intramuscular cortisone was prompt and pronounced. Relapse occurred if the drug was not continued. The proper maintenance dosage had to be individualized, as in the treatment of diabetics with insulin.

The term "menopausal muscular dystrophy" is not satisfactory, but no better one has been suggested. Dosage, maintenance and the complications of fluid accumulation, euphoria and sleeplessness, require further study. More cases must be reported before the syndrome can be accepted as a disease entity. The condition, however, warrants further investigation, particularly because of the relief offered by cortisone in a disease previously considered as unresponsive to any form of treatment.

1. Shy, G. M.; Brendler, S.; Rabinovitch, R., and McEachern, D.: Effects of Cortisone in Certain Neuromuscular Disorders, J. A. M. A. **144**: 1353 (Dec. 16) 1950.
2. Shy, G. M., and McEachern, D.: Clinical Features and Response to Cortisone of Menopausal Muscular Dystrophy, J. Neurol., Neurosurg. & Psychiat. **14**: 101 (May) 1951.

THROMBOEMBOLISM FOLLOWING DIURESIS

Autopsy studies indicate that the incidence of thrombosis and embolism in congestive heart failure is much higher than is often appreciated clinically. From 15% to 50% of patients dying of congestive failure have been found to have pulmonary infarction, often unrecognized clinically and often associated with asymptomatic thrombi in the deep leg veins, atria of the heart and elsewhere.[1] Although congestive failure itself predisposes to thrombosis, there is some evidence that this tendency is aggravated by currently accepted therapy for congestive failure and particularly by the injudicious use of mercurial diuretics. Macht [2] and Pere,[3] for example, have demonstrated a significant shortening of the coagulation time following the administration of mercurial diuretics to rabbits and to man. Pere noticed that this effect was most pronounced during the period of diuresis and that the acceleration of clotting was roughly proportional to the volume of urine excreted. Russek and Zohman [4] observed the development of cerebral thrombosis and hemiplegia in three elderly patients during a profound diuresis and drop in blood pressure produced by a single dose of 2 cc. of a mercurial diuretic.

More recently Marvel and Shullenberger [5] have provided additional evidence of a relationship between rapid diuresis and thrombosis. These investigators studied 15 patients with congestive heart failure and two without heart disease during the diuresis produced by mersalyl and theophylline injection (solution salygran-theophylline*). This was given intramuscularly every 24 to 48 hours in 1 cc. to 2 cc. doses except for an initial dose of 0.5 cc. During the period of diuresis there was definite hemoconcentration and increase in blood viscosity in all patients. Prothrombin values tended to increase, and there were inconstant changes in fibrinogen and globulin concentrations and coagulation time. Recognizable phlebothrombosis or pulmonary embolism developed in four of the 15 patients with heart failure between the sixth and ninth days of treatment at a time when the average hematocrit for all patients was at its peak and the factors favoring intravascular thrombosis were usually concentrated. They conclude that mercurial diuretics must be used cautiously in patients with congestive failure.

1. Willius, F. A.: Mode of Death in Various Types of Heart Disease, Am. J. M. Sc. **171**: 480, 1926. Kinsey, D., and White, P. D.: Fever in Congestive Heart Failure, Arch. Int. Med. **15**: 163 (Jan.) 1940. Hines, L. E., and Hunt, J. T.: Pulmonary Infarction in Heart Disease, Ann. Int. Med. **15**: 644, 1941. Greenstein, J.: Thrombosis and Pulmonary Embolism, South African M. J. **19**: 350, 1945. Hampton, A. O., and Castleman, B.: Correlation of Postmortem Chest Teleoroentgenograms and Autopsy Findings with Special Reference to Pulmonary Embolism and Infarction, Am. J. Roentgenol. **43**: 305, 1940. Carlotti, J.; Hardy, I. B., Jr.; Linton, R. R., and White, P. D.: Pulmonary Embolism in Medical Patients, Am. Heart J. **33**: 737, 1947.
2. Macht, D. I.: Thromboplastic Properties of Some Mercurial Diuretics, Am. Heart J. **31**: 460, 1946.
3. Pere, S.: On the Effect of Digitalis, Strophanthin and Mercurial Diuretics on Blood Coagulation, Ann. med. int. Fenniae, **36**: 124, 1947.
4. Russek, H. I., and Zohman, B. L.: Cerebral Thrombosis Precipitated by Injection of a Mercurial Diuretic, J. A. M. A. **139**: 922 (April 2) 1949.
5. Marvel, R. J., and Shullenberger, W. A.: Thromboembolic Phenomena Associated with Rapid Diuresis in the Treatment of Congestive Heart Failure, Am. Heart J. **42**: 194, 1951.

V 14
1951

It is possible that, in this series of patients, other treatment factors, such as bed rest or digitoxin, contributed to the production of thrombi. Certainly, bed rest, by increasing venous stasis, predisposes to thrombosis, but the period of bed rest was reduced to a minimum in these patients. Digitalis, too, has been said to increase the likelihood of thrombosis by shortening the coagulation time [6] and increasing the heparin tolerance,[7] but some investigators [8] have been unable to confirm these findings. In the study of Marvel and Shullenberger, some of the patients received digitoxin but there was no evidence that it affected the clotting mechanism in any way. Perhaps, as Pere [8] suggested, any effect that digitalis has on the clotting mechanism is due to its ability to produce diuresis.

In any case, it appears that too rapid diuresis with mercurial diuretics plays an important role in predisposing patients with congestive heart failure to thrombolic complications. To prevent such complications, Russek and Zohman [4] recommend a small initial dose of the diuretic in elderly patients. Marvel and Shullenberger [5] suggest small or less frequent doses throughout the course of treatment, to prevent rapid changes in hematocrit and blood viscosity. In addition, they advise the use of anticoagulants in the dehydration period of therapy when (1) the patient is debilitated and early ambulation is difficult, (2) the patient has auricular fibrillation and there is danger of dislodging mural thrombi, (3) there is marked atherosclerosis particularly of the coronary or cerebral vessels, (4) there is a history of previous thromboembolic episodes, or (5) thromboembolic complications develop during any phase of congestive failure. They feel, also, that early mobilization of the legs, to prevent regional stasis, is an important prophylactic measure.

CARCINOMA ARISING IN DRAINING SINUS TRACTS

Carcinoma arising in a chronic osteomyelitic sinus tract has been reported sporadically for more than a hundred years and with somewhat greater frequency within the last decade. On the basis of a thorough review of literature, Bereston and Ney [1] conclude that the new growth occurs usually in men 40 to 60 years of age with a history of osteomyelitis and sinus tract formation of 20 to 30 years' duration. The commonest sites are the tibia, the femur, and the bones of the foot. Carcinoma should be suspected if a cauliflower mass appears at the sinus opening or if a foul discharge occurs. Often there is no external evidence of carcinoma and only a biopsy or roentgen examination of the bone or both will reveal its presence. Most observers comment on the relatively benign nature of this type of carcinoma and the rarity of regional and visceral metastatic lesions. Amputation appeared to be curative in most instances. Bereston and Ney found in the literature seven cases of metastasis from carcinoma arising in chronic osteomyelitic sinus tracts. Of these seven cases, only four were definite cases of visceral metastasis demonstrated by autopsy and in only one was metastasis in the skin observed. They report two of their own cases of squamous cell carcinoma arising in a chronic osteomyelitic sinus in which necropsy was performed. Two explanations are offered for the rarity of metastasis: the low-grade malignancy of the new growth and the possibility that many of the tumors that have been reported as malignant may have been pseudoepitheliomatous hyperplasia.

Niebauer [2] reported two cases of osteomyelitis of many years' duration with pain and profuse foul discharge from the sinuses of several months' duration only. The first patient had a pathological fracture of the femur and bleeding from the sinuses in his thigh.

In a review of all cases encountered at the Mayo Clinic in which carcinoma had developed in chronic cutaneous sinuses and fistulas, McAnally and Dockerty [3] found that the malignant change had originated in chronic osteomyelitic sinuses in nine cases, in fistula in ano in three cases, and in empyemic sinus one case. In two of these nine cases there were metastases to the regional lymph nodes. All the lesions were characteristic of squamous cell epithelioma of low-grade malignancy. There were two cases in which there was metastasis from a malignant lesion in a chronic osteomyelitic sinus. These, added to the nine cases reported in the literature, make 11 cases in which distant spread occurred. These authors believe that the regional lymph nodes should be treated with roentgen rays and that even a prophylactic dissection of these nodes should be considered. Stewart and co-workers [4] reported one case of carcinomatous degeneration of the epithelial lining of a chronic osteomyelitic cavity with cutaneous metastatic lesions of squamous cell carcinoma. The case is unique in that cutaneous metastatic lesions here constituted the only clinical evidence of carcinomatous change in osteomyelitis.

In a recent publication, Gillis and Lee [5] call attention to cancer as a sequel to war wounds. Twenty-four such cases are reported in which squamous cell carcinoma has developed at the site of the wound. In this series no carcinoma developed sooner than 18 years after the injury, and cases are still occurring more than 30 years after the end of the war. These authors emphasize that a patient with a chronic discharging sinus or an extensive adherent scar is never safe from the risk of malignant change. Prophylactic measures should consist of excision of adherent scars with, if necessary, their replacement by suitable pedicle flaps having a good blood supply. Amputation

6. Macht, D. I.: Experimental Studies on Heparin and Its Influence on Toxicity of Digitaloids, Congo Red, Cobra Venom and Other Drugs, Ann. Int. Med. **18**: 772, 1943. Werch, S. C.: Reduction of the Coagulation Time of Rabbit's Blood by Digitalis, Quart. Bull. Northwestern Univ. M. School **17**: 50, 1943. Massie, E.; Stillerman, H. S.; Wright, C. S., and Minnick, V.: Effect of Administration of Digitalis on Coagulability of Human Blood, Arch. Int. Med. **74**: 172 (Sept.) 1944.

7. de Takats, G.; Trump, R. A., and Gilbert, N. C.: Effect of Digitalis on Clotting Mechanism, J. A. M. A. **125**: 840 (July 22) 1944.

8. Ramsay, H.; Pinschmidt, N. W., and Haag, H. B.: Effects of Digitalis upon Coagulation Time of Blood, J. Pharmacol. & Exper. Therap. **85**: 159, 1945. Sokoloff, L.; Ferrer, M. I., and De Graff, A. C.: Effect of Digitalization on Coagulation Time of Blood in Man, Fed. Proc. **4**: 136, 1946.

1. Bereston, E. S., and Ney, C.: Squamous Cell Carcinoma Arising in a Chronic Osteomyelitic Sinus Tract with Metastasis, Arch. Surg. **43**: 257-268 (Aug.) 1941.

2. Niebauer, J. J.: Development of Squamous-Cell Carcinomata in Sinus Tracts of Chronic Osteomyelitis, J. Bone & Joint Surg. **28**: 280-285 (April) 1946.

3. McAnally, A. K., and Dockerty, M. B.: Carcinoma Developing in Chronic Draining Cutaneous Sinuses and Fistulas, Surg., Gynec. & Obst. **88**: 87-96 (Jan.) 1949.

4. Stewart, C. D.; Obermayer, M. E., and Woolhandler, H.: Cutaneous Metastatic Carcinoma Originating from Osteomyelitic Cavities, Arch. Dermat. & Syph. **41**: 545-550 (March) 1940.

5. Gillis, L., and Lee, S.: Cancer as a Sequel to War Wounds, J. Bone & Joint Surg. **33 B**: 167-179 (May) 1951.

should be performed if an osteomylitic sinus persists for several years and does not yield to treatment. Warty changes of indolent ulceration of scars should be regarded with suspicion and investigated by biopsy. Any increase in pain or discharge in association with the sinus should receive prompt attention. If malignant change develops, treatment should be as prompt and as radical as with any other cancer.

GEOGRAPHICAL VARIANTS OF THE CHOLERA VIBRIO

While general statements are often made about the relative sensitivity of a species of bacteria to a given antibiotic, such statements may be misleading with respect to any particular strain of that organism. This fact was emphasized in a recent investigation by Felsenfeld and associates [1] of the Hektoen Institute, Chicago. Studying 53 strains of Vibrio comma isolated in Egypt, India, and French Indochina, these workers found that the susceptibility of these organisms to different antibiotics varied according to the geographical origin of the strain. Cholera vibrios from Bombay and Egypt were susceptible in vitro to almost all the antibiotics tested in the series, including penicillins G and O, streptomycin, chloramphenicol, aureomycin, neomycin, terramycin, polymyxin D, and prodigiosin; whereas several strains from Bengal, Assam, and French Indochina were not sensitive to most antibiotics in doses smaller than 100 units or micrograms per cubic centimeters of tested fluid. It is apparent in this as in other infections that maximum efficiency and economy in antibiotic therapy can be obtained only if the sensitivity of the particular infecting organism is determined in each case.

ANTIFATIGUE DIET

Ershoff [1] of the Emory W. Thurston Laboratories, Los Angeles, has reported that the known nutritional factors are inadequate under stress conditions in rats. He found that desiccated liver powder contains the necessary antifatigue factor for these animals.

Sixty female rats, 22 to 25 days old (average weight 44.2 gm.), were divided into three groups. Each group was fed on one of the following diets: (1) a basic ration consisting of 61% sucrose, 24% casein, 10% cotton seed oil, 5% salt mixture, and adequate amounts of nine synthetic vitamins and two natural vitamins (A and D); (2) the same basic ration plus excessive amounts of vitamin B complex; and (3) the same basic ration plus 10% desiccated liver powder. After 12 weeks of *ad libitum* feeding, the average weight of the rats on the first diet had increased to 215 gm., those on the second diet to 229 gm., and those on the third diet to 248 gm.

All three groups were then subjected to the same stress conditions. The rats were placed in a barrel 28 inches (74 cm.) in diameter, with smooth vertical sides, which was filled to a depth of 18 inches (46 cm.) with water at 20 C. Measurements were made of the length of time each rat would swim before remaining submerged for a period of 15 seconds. Rats remaining below the surface of the water for a longer period almost invariably drowned.

A significant difference was observed between the various dietary groups. Rats on the first diet swam on an average for 13.3 minutes before sinking, and those on the second diet, for 13.4 minutes. Of the 12 rats on the liver supplement, three swam for 63, 83, and 87 minutes, respectively. The remaining nine rats of this group were swimming at the end of 120 minutes, when the test was discontinued.

Swimming tests were also conducted with rats of a like age and weight who had been raised from weaning on a natural food ration (purina® laboratory chow). The average swimming time with these rats was 24.7 minutes. This is nearly twice as long as the survival time for rats on the first or second diet but significantly less than the survival time of rats receiving the liver supplement.

These experiments suggest the presence in desiccated liver powder of some unknown vitamin, hormone, or other nutritional factor not present in adequate amounts in routine laboratory diets.

1. Felsenfeld, O., and others: In Vitro Sensitivity of Recently Isolated Cholera Vibrios to Ten Antibiotics, Proc. Soc. Exper. Biol. & Med. 77: 287 (June) 1951.

1. Ershoff, B. H.: Beneficial Effect of Liver Feeding on Swimming Capacity of Rats in Cold Water, Proc. Soc. Exper. Biol. & Med. 77: 488 (July) 1951.

PUBLIC RELATIONS CONFERENCE IN LOS ANGELES

At the Fourth Annual Medical Public Relations Conference in Los Angeles, December 2-3, reports on three surveys conducted in Ohio, Illinois, and California will provide insight into medical care problems as the public sees them.

Before the Conference program was set up, state medical society secretaries were asked to identify the major public relations problem facing medicine. This survey indicated that the cost of sickness and misunderstanding which arises in the physician's office are the profession's major public relations problems. Accordingly, the forthcoming Public Relations Conference has been designed to discuss these issues.

"Joining Forces for Better PR" is the theme of the Conference. The forces involved are the individual physician, the county medical society, the state medical society, and the American Medical Association.

The first panel discussion under the topic "The Cost Factor in Everyday Practice" promises to be a major attraction at the Conference. When medicine is willing to discuss such topics as "Fees Should Be No Mystery" and "Time Is Money to Your Patients Too," then we are reaching the basic problems that affect the attitudes of the general public.

While it is important to identify problems and pinpoint objectives, the 1951 Conference will go still further in discussing techniques for reaching these objectives. The American Medical Association's Public Relations Program for 1952 will be explained, together with public relations goals for state societies, county societies, and individual physicians. All interested in medical public relations are invited to attend this conference, the program of which appears on page 1145 of this issue of THE JOURNAL.

V 14
1951

ORGANIZATION SECTION

FOURTH ANNUAL MEDICAL PUBLIC RELATIONS CONFERENCE

Hotel Biltmore, Los Angeles

Sunday and Monday, December 2 and 3

THEME: "JOINING FORCES FOR BETTER PR"

PROGRAM

SUNDAY, DECEMBER 2

REGISTRATION

10:30 a. m., North Galleria

LUNCHEON

12:15 p. m., Music Room

Toastmaster: JOHN W. CLINE, M.D., San Francisco, President, American Medical Association

Address of Welcome
JOHN W. CLINE, M.D.

Keynote Address: Working Together in '52
LOUIS H. BAUER, M.D., Hempstead, N. Y., President-Elect, American Medical Association

WHAT THE PEOPLE THINK

2:30 p. m., Music Room

Chairman: GUNNAR GUNDERSEN, M.D., LaCrosse, Wis., Chairman, Executive Committee, Board of Trustees, American Medical Association

A Psychologist Studies Medical Care
ERNEST DICHTER, Ph.D., New York, Psychological Consultant

Surveying the Toledo Area
EDGAR A. SCHULER, Ph.D., Detroit, Department of Sociology, Wayne University

An Urban-Rural Opinion Test Tube
LAWRENCE W. REMBER, Chicago, Director of Field Service, Department of Public Relations, American Medical Association

Questions and Discussion

MONDAY, DECEMBER 3

PR PROBLEM NUMBER ONE: THE COST OF SICKNESS

9:15 a. m., Music Room

Chairman: JOSEPH D. MCCARTHY, M.D., Omaha, Council on Medical Service, American Medical Association

The Cost Factor in Everyday Practice

Fees Should Be No Mystery
CYRUS W. ANDERSON, M.D., Denver, Chairman, Board of Trustees, Colorado Medical Society

Explaining Those "Other" Medical Expenses
HARLAN A. ENGLISH, M.D., Danville, Ill., Committee on Rural Medical Service, Illinois State Medical Society

Time Is Money for Your Patients, Too
STANLEY R. TRUMAN, M.D., Ventura, Calif., Past President, American Academy of General Practice.

Questions and Discussion

Medical Society Solutions to the Cost Problem

PR Factor in Collecting Bills
STANLEY R. MAUCK, Columbus, Ohio, Executive Secretary, Columbus Academy of Medicine

Your Patient and His BIG Bills
EARL W. MERICLE, M.D., Indianapolis, Public Relations Committee, Indiana State Medical Association

The 'Regardless of Ability to Pay' Idea
JOSEPH F. DONOVAN, San Jose, Calif., Executive Secretary, Santa Clara County Medical Society

Questions and Discussion

LUNCHEON

12:15 p. m., Galleria Room

Toastmaster: DWIGHT H. MURRAY, M.D., Napa, Calif., Chairman, Board of Trustees, American Medical Association

Toastmaster's Remarks
DWIGHT H. MURRAY, M.D.

The Physician's Responsibility as a Leader
LEWIS A. ALESEN, M.D., Los Angeles, President-Elect, California Medical Association

JOINING FORCES WITH OTHER GROUPS

2:15 p. m., Music Room

Chairman: HARVEY SETHMAN, Denver, Chairman, Advisory Committee, Department of Public Relations, American Medical Association

Representing Physicians on the National Level
ERNEST B. HOWARD, M.D., Chicago, Assistant Secretary, American Medical Association

State-Wide Organizations and the Medical Society
WILLIS H. HURON, M.D., Iron Mountain, Mich., Past Counselor, Michigan State Medical Society

The Doctor in Community Affairs
GEORGE SCHWARTZ, M.D., New York, Committee on Public Relations, Bronx County Medical Society.

Questions and Discussion

WHERE DO WE GO FROM HERE?

3:30 p. m., Music Room

Your A. M. A.'s 1952 PR Program
LEO E. BROWN, Chicago, Director of Public Relations, American Medical Association

Public Relations Goals for State Societies
JOSEPH E. MOTT, M.D., Paterson, N. J., Sub-Committee on Public Relations, Medical Society of New Jersey.

What the County Society Can Do
FRED G. MITTEN, Phoenix, Ariz., Executive Secretary, Maricopa County Medical Society

The Individual Physician's Role
CHARLES R. HENRY, M.D., Little Rock, Ark., President, Arkansas State Medical Society

4:45 p. m., Adjournment of Conference

147
51

MEDICAL NEWS

CALIFORNIA

Scholarships in Medical Research.—Scholarships to persons gifted in medical research will be granted within the next few months under terms of the Bank of America-Giannini Foundation. The grants are open to citizens of the United States who apply through any of the accredited California medical schools. They are designed to support the student or scholar researcher through the school year of 1952-53, and in some cases will run as high as $5,000. Applicants should have the degree of Doctor of Medicine or Doctor of Philosophy, although these doctorates may be waived in certain instances. This is the second year of research grants made under instructions left by the late A. P. Giannini, founder of the Bank of America. Details may be obtained by writing to the Bank of America-Giannini Foundation, 300 Montgomery Street, San Francisco 20.

COLORADO

Appoint Medical Director of National Jewish Hospital.—Dr. Sidney H. Dressler, who has been appointed medical director of the National Jewish Hospital in Denver, joined the hospital after World War II as chief resident, was appointed assistant medical director a few years later, and was instrumental in organizing the cardiopulmonary laboratory. He is the eighth medical director in the history of the institution.

CONNECTICUT

Woman's Auxiliary Program.—Dr. R. B. Robins, Camden, Ark., president-elect of the American Academy of General Practice, addressed the semiannual dinner meeting of the Woman's Auxiliary to the Connecticut State Medical Society Nov. 1 in Hartford on "Medicine in This Changing World."

Dr. Fasanella Heads Ophthalmology Department.—Dr. Rocko M. Fasanella, assistant clinical professor of ophthalmology, Yale University School of Medicine, New Haven, has been appointed head of the department of ophthalmology, succeeding Dr. Eugene M. Blake, now clinical professor emeritus.

ILLINOIS

Chairman of Cancer Committee.—Dr. Warren H. Cole, head of the department of surgery, University of Illinois College of Medicine, Chicago, has been elected chairman of the Medical and Scientific Committee of the American Cancer Society, Illinois Division, for the year 1951-52. The committee, composed of 56 Illinois physicians and scientists, is responsible for the division's medical and scientific policy. Dr. Cole has been a vice-president of the Illinois Division; he is also a member of the national society's board of directors.

Chicago

Award Koessler Fellowship.—The Institute of Medicine of Chicago announces that the $500 Jessie Horton Koessler Fellowship for 1951-52 has been granted to E. Russell Alexander for work on the pathogenicity, pathogenesis, and pathology for the laboratory mouse of recently isolated strains of Histoplasma capsulatum. This work will be done in the Public Health and Preventive Medicine Laboratory, School of Medicine, University of Chicago, under the direction of Dr. Clayton G. Loosli.

Faculty Promotions.—The following promotions on the faculty of the Chicago Medical School became effective Oct. 1: promoted from associate professor to professor, Dr. Piero P. Foa (physiology and pharmacology); promoted from assistant professor to associate professor, Dr. Aldo A. Luisada, (medicine), Jay A. Smith, Ph.D., (physiology), and Dr. Ruth Weyl, (anesthesiology). Those promoted from associates to assistant professors include Drs. David Presman, Isadore Spinka, and Harry Weisberg.

Meeting on Cerebral Palsy.—The Chicago Society of Physical Medicine and Rehabilitation will hold a dinner meeting at 6:30 p. m. Nov. 28 at the YMCA, 1804 W. Congress St., then will adjourn to classroom A of Loyola University Medical School, 706 South Wolcott Ave., for a scientific session at 8 p. m., when Dr. Joseph Koczur will speak on "Treatment of Cerebral Palsy." Physicians, other professional personnel, and their guests are welcome.

KENTUCKY

Narcotic Violation.—Dr. Joseph Herman Freeman, formerly Freedman, of Newport, pleaded guilty to an indictment charging violation of the federal narcotic laws in the United States District Court at Covington, and on Sept. 25 he was sentenced to serve a term of one year and one day.

Telephone Postgraduate Course.—The Kentucky State Medical Association in cooperation with the University of Louisville School of Medicine will broadcast by telephone scientific programs for one hour each month during February, March, and April. Programs will eminate from the medical school and will be under the direction of Dr. Herbert L. Clay. They will be transmitted to the central office in Louisville and piped out to subscribing county societies.

MARYLAND

Friedenwald Memorial Lecture.—Dr. Albert F. R. Andresen of Brooklyn gave the sixth annual Dr. Julius Friedenwald Memorial Lecture on Oct. 18 at the University of Maryland School of Medicine, Baltimore, on "Allergies of the Gastrointestinal Tract." This lectureship was established at the university in 1941 in honor of Dr. Friedenwald, former professor of gastroenterology.

MICHIGAN

Wayne Alumni Plan Medical Library.—The Wayne University Medical Alumni Association has announced its plans to raise $200,000 for construction of a library wing to be added to Wayne's new medical-science building in Detroit. Wayne's medical library, including about 28,000 volumes and 672 current periodicals, is now housed in the newest of the present medical school buildings. The Medical Library Fund was organized as a nonprofit trustee corporation with the stated purpose "to solicit, receive and disburse funds for the construction and equipment of a library building or a library addition for the Wayne University College of Medicine and for enlargement of library resources." Dr. Clark D. Brooks, Detroit, is president of the board of trustees of the fund and honorary chairman of the campaign committee, headed by Dr. John E. Webster, Detroit.

MINNESOTA

Society Election.—The Minnesota Public Health Association at its recent meeting elected Dr. William F. Braasch, Rochester, as president; Dr. Walter H. Valentine, Tracy, secretary, and Mr. John B. Burke, St. Paul, treasurer. Dr. Edward A. Meyerding, St. Paul, this year completes his 27th year as executive secretary of the association.

Personals.—Dr. Edward C. Kendall, Rochester, who recently lectured to the faculty of the Medical School of the University of Edinburgh, Scotland, was honored by receiving jointly with Professor Tadeus Reichstein, Basel, Switzerland, the Cameron Prize for 1951 of the university. This award was made to them in recognition of their fundamental research leading to the

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

V 14
1951

discovery of cortisone.——Dr. Frederick W. Wittich, Minneapolis, secretary-treasurer of the American College of Allergists, has been elected president of the International Association of Allergists.

MISSOURI

Symposium on Cancer of Stomach.—This symposium will be held Dec. 1 at the Ellis Fischel State Cancer Hospital, Columbia, sponsored by the Missouri Society of Pathologists and the Missouri Division of the American Cancer Society. The meeting, open to all interested physicians, will consist of presentations of recent advances in diagnosis and therapy of gastric cancer to be followed by discusison. Guest speakers will be Drs. Edward B. Benedict, Boston; Gordon P. McNeer, New York; Malcolm B. Dockerty, Rochester, Minn., and Leo G. Rigler, Minneapolis.

Medical Forum for Laymen.—The St. Louis Medical Society is sponsoring the St. Louis Medical Forum on the second Thursday of each month at 8 p. m. at the medical society building. These are free medical discussions designed especially for the public and will include an audience question period. Remaining lectures are as follows:

Dec. 13, Safeguarding Yourself Against Tuberculosis.
Jan. 10, What You Should Know About Polio.
Feb. 14, How to Take Care of Your Heart.
March 13, Arthritis.
April 10, Cancer of the Skin; Cancer of the Abdomen.
May 8, Your Mental Health—An Everyday Problem.

NEW HAMPSHIRE

Society News.—The New Hampshire Academy of General Practice held its annual clinical assembly on Oct. 17 at the Veterans Administration Hospital, Manchester. The following officers were elected for 1952: Dr. Nathan Brody, Laconia, president; Dr. Alfred D. Mihachik, Northwood Narrows, president-elect, and Dr. Israel A. Dinerman, Canaan, vice-president.

NEW JERSEY

Society News.—At the annual meeting of the New Jersey Orthopaedic Society Oct. 12 in Longport, Dr. Raphael R. Goldenberg, Paterson, became president, and Dr. William Kruger, Newark, secretary. On the scientific program Dr. John M. Naame, Margate City, spoke by invitation on "Osteochondrosis of the Hip—Perthes' Disease."

Manager of Clinical Research Appointed.—Dr. Elmer Alpert has joined the Medical Division of Merck & Co., Inc., Rahway, as manager of the clinical research department. Before going to Merck Dr. Alpert was in private practice in New York with Dr. Norman H. Jolliffe. He was also physician to the Nutrition Clinic, City of New York Department of Health, and has served as a surgeon with the United States Public Health Service in Washington, D. C., and as secretary to the Committee in Nutrition of Industrial Workers, Food and Nutrition Board, National Research Council.

NEW YORK

Personals.—Dr. Charles A. Poindexter, professor of medicine at New York University Post-Graduate Medical School, was recently elected president of the New York Heart Association, succeeding Dr. Irving S. Wright, New York.——Dr. Herman G. Weiskotten, Skaneateles, retired dean of Syracuse University College of Medicine, left in September for Costa Rica, where he was called by that government to evaluate medical school facilities there.

24-Hour Blood Bank Service.—Any hospital in Westchester County, needing a special type of blood in an emergency, can quickly find out where this blood is available on an exchange basis. The Westchester County Medical Society has established a clearing-house service on a 24-hour basis for information concerning blood for exchange among the 13 blood banks in the county. Each blood bank reports daily to the society headquarters types and quantities of blood available for exchange. Hospitals needing blood telephone the society office to find out where the particular type and quantity may be obtained.

Postgraduate Lectures.—These postgraduate lectures have been arranged for the Schoharie County Medical Society to be given at 4 p. m. at the Cobleskill Central School, Cobleskill.

Nov. 20, George A. Wolf, New York, Headache Mechanisms.
Nov. 27, Victor W. Logan, Rochester, Present Trends in Peptic Ulcer Therapy.

On Dec. 12 at 8:30 p. m. the Dutchess County Medical Society will be addressed by Dr. Milton Helpern, New York, on "Sudden and Unexpected Natural Deaths." The lecture will be held in the Hudson River State Hospital in Poughkeepsie. Two lectures have been planned for the Jefferson County Medical Society at the Black River Valley Club in Watertown.

Dec. 18, Jesse Tolmach, New York, The Evaluation of Disability.
Jan. 15, Clyde L. Randall, Buffalo, Office Management of Female Pelvic Disorders.

Dr. Thomas H. McGavack of New York will address the Rensselaer County Medical Society at 8:30 p. m. Dec. 11 at the Samaritan Hospital in Troy on "Common Errors in the Management of Diabetic Coma." Dr. John R. Paine, Buffalo, will speak on "Surgical Treatment of Pulmonary Diseases and Injuries" at a meeting of the Ontario County Medical Society at 7 p. m. Dec. 11 at the Clifton Springs Sanitarium and Clinic. These lectures are part of the postgraduate instruction arranged by the Medical Society of the State of New York in cooperation with the New York State Department of Health.

New York City

Hauswirth Lecture.—The third Louis Hauswirth Lecture in Medicine, sponsored by the Alumni Association of Beth David Hospital, will be delivered at the hospital on Nov. 28 by Dr. Franklin M. Hanger on "Difficulties in Diagnosis of Liver Disorders."

Clinic Dedicated to Dr. McCarthy.—The $150,000 urological clinic on the fifth floor of the New York Polyclinic Medical School and Hospital was dedicated Oct. 26 and named in honor of Dr. Joseph F. McCarthy, who retired last summer as director of the urological department.

Appoint Associate Dean.—Dr. Frode Jensen has been appointed associate dean at New York University Post-Graduate Medical School, a unit of the New York University-Bellevue Medical Center. Dr. Jensen for the past year has been assistant dean and assistant director of the Medical Center's Division of Affiliated and Regional Hospitals. He is on the staffs of Bellevue, University, and Lenox Hill hospitals. Dr. Jensen was formerly a member of the staff of the Council on Medical Education and Hospitals of the American Medical Association and is presently the director of the House Staff Educational Plan of the New York Committee on the Study of Hospital Internships and Residencies.

Personals.—Dr. Frank M. Frankfeldt has returned from Rio de Janiero, where he gave a series of lectures and operative demonstrations at the invitation of Dr. W. G. Gentile, president of the Brazilian Proctologic Society.——Dr. Jesse J. Hymes has been appointed a civilian consultant in genitourinary surgery to the Surgeon General of the U. S. Army.——Dr. Frank P. Guidotti, medical director of the New York Hotel Trades and Hotel Association Health Center, New York, has been appointed assistant clinical professor of industrial medicine at the New York University Post-Graduate Medical School-Bellevue Medical Center.——Dr. Ephraim M. Bluestone has been elected president of the American Association of Hospital Consultants.

New Health Area Map of City.—The 1950 Revision of the Health Area Map of New York City has just been completed. The map of health areas (aggregates of census tracts as defined by the U. S. Bureau of the Census) is revised every 10 years by representatives of the Department of Health of the City of New York, the Welfare Council of New York City, and the New York Tuberculosis and Health Association. This map is important since the health department uses these areas in its allocation and distribution of vital statistics relating to births, causes of death, and the principal reportable communicable diseases. On an average, each area contains a population of 25,000 persons. In Queens, due to its growth of population, the number of health areas has been increased from 60 to 69. In

Manhattan the number has been reduced to 89, six fewer than in 1940, because of the dwindling of residential population. Brooklyn, Bronx, and Staten Island remain the same. Copies of the 1950 revision of the map are available from the Statistical Service of the New York Tuberculosis and Health Association, 386 Fourth Avenue, New York 16, at 75 cents per copy, or $5 for lots of 10.

NORTH CAROLINA

Physicians' Meeting at Duke University.—The annual meeting of the North Carolina Region of the American College of Physicians will be held at The Duke University School of Medicine, Durham, Dec. 6. Scientific sessions will be held in the Duke Hospital Amphitheatre at 2 p. m. At an informal dinner at the Hope Valley Country Club, Dr. Cyrus C. Sturgis, professor of internal medicine, University of Michigan Medical School, Ann Arbor, will speak. Among the speakers at the scientific session will be Dr. Charles H. Burnett, newly appointed professor of medicine, University of North Carolina School of Medicine, Chapel Hill, and Dr. Paul F. Whitaker, Kinston.

OHIO

Seminar on Homicide.—Kettering Laboratory in the department of preventive medicine and industrial health at the University of Cincinnati College of Medicine will present a seminar for police officers on Investigation of Homicide Dec. 3-7, in cooperation with coroner's office of Hamilton County and the police department of the City of Cincinnati. The seminar will cover all phases of scientific detection of homicide and will consist of four intensive daily eight-hour sessions divided into 48 illustrated lectures. Out-of-state speakers on the staff of 26 lecturers include Clarence W. Muehlberger, Ph.D., and Dr. LeMoyne Snyder, Lansing, Mich.

PENNSYLVANIA

Funds for Medical Education.—The house of delegates of the Medical Society of the State of Pennsylvania at its annual meeting passed a resolution asking its members to voluntarily contribute at least $25 each to assist the medical schools which need financial aid in increasing their facilities for teaching more students. The society expects to raise $250,000 during the next year, which will be turned over to the American Medical Education Foundation.

Philadelphia

Annual Residents and Exresidents Meeting.—The sixty-fifth annual banquet of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held Dec. 4 at 7 p. m. at the Penn-Sheraton Hotel. Reservations may be had by writing to the Secretary-Treasurer Dr. Robert C. McElroy, Room 514, 133 S. 36th St., Philadelphia 4. The banquet will be dedicated to the honor of the former presidents of the Blockley Medical Society. It is particularly desired that all members who are former presidents make every effort to be present at the banquet.

Golden Anniversary of Temple University.—Temple University celebrated its 50th anniversary, beginning with a dinner at the Bellevue-Stratford, Oct. 11-13. At a special convocation Oct. 12 medical school deans were honored. Honorary Doctorate of Laws were conferred on Marion S. Fay, Ph.D., Women's Medical; Dr. Charles L. Brown, Hahnemann; Dr. John McK. Mitchell, University of Pennsylvania; and Dr. George A. Bennett, Jefferson, all schools located in Philadelphia, and Dr. William S. McEllroy, University of Pittsburgh. Scientific programs, clinics, and symposiums were scheduled on all three days at Temple University Hospital and Medical School.

TENNESSEE

Research Grants to University.—The United States Atomic Energy Commission has awarded $30,406 to the University of Tennessee Medical Units in Memphis to continue four research projects and to begin a new study. The new project, to be directed by Dr. John L. Wood, professor of chemistry, involves the preparation of a radioactive sulphur-labelled thiocyanate.

TEXAS

Personals.—Dr. Harvey C. Slocum, professor of anesthesiology at the University of Texas Medical Branch, Galveston, was guest lecturer in anesthesia at the University of Nuevo Leon Medical School, Monterrey, Mexico, during August.——Dr. Victor C. Calma has accepted appointment as assistant professor of physiology at the University of Texas Medical Branch, Galveston.

Broadcast Courses by Telephone.—For the first time in Texas, medical programs will be broadcast by telephone during January, February, and March through the Texas Medical Association. A monthly one-hour program of postgraduate information, probably a panel discussion by medical authorities, will originate at a central point in the state and will be heard by county societies and other medical organizations. Preliminary data including possible visual aids will be sent each county society before the broadcasts. Local discussion of the subjects will be possible after the telephone program.

VERMONT

Society News.—New officers of the Vermont Society of Pathologists elected for the year are Dr. Bjarne Pearson, Burlington, president; Dr. Ernest Stark, Burlington, vice-president, and Dr. Roy Korson, Burlington, secretary-treasurer.

State Medical Election.—The Vermont State Medical Society at its annual meeting Oct. 2 in Manchester installed Dr. Wilmer W. Angell, Randolph, president. Other officers include Dr. Paul K. French, Burlington, president-elect; Dr. James P. Hammond, Bennington, secretary, and Dr. Howard J. Farmer, St. Johnsbury, speaker of the house of delegates.

VIRGINIA

Dr. Feller Heads Department.—Dr. Alto E. Feller, associate professor of preventive medicine and assistant professor of medicine at Western Reserve University School of Medicine, Cleveland, has become chairman of the department of microbiology at the University of Virginia Department of Medicine, Charlottesville.

Dedicate Memorial Hospital.—The Shenandoah County Memorial Hospital, built on a 20-acre tract on the outskirts of Woodstock, was dedicated Sept. 16. The hospital is a memorial to the men and women of Shenandoah County who have served in the armed forces. It was made possible through contributions of county and other citizens, supplemented with federal and state funds under the Hill-Burton bill. The hospital was built at a cost of $800,000.

WASHINGTON

Brown Memorial Lecture.—Dr. John H. Lawrence of the Donner Laboratory of Medical Physics, University of California Medical School, Berkeley, delivered the second annual Aaron Brown Memorial Lecture in the University of Washington Health Science Auditorium Nov. 9 on "Current Uses of Nuclear Substances in Diagnosis and Treatment." The lecture was scheduled by the Phi Delta Epsilon fraternity.

Convention Bulletin.—The Washington State Medical Association at its annual meeting in Seattle in September published a daily convention bulletin, which was called *WSMA Convention News*. The 8½ by 11, four-page bulletin contained pictures taken by a staff member with office equipment, and the reporting was done by Mary Frear of *Northwest Medicine*. It was the first time that a convention bulletin has been published by a state association.

WEST VIRGINIA

Society News.—Dr. Otto Joseph Lowy, Charleston, was elected president of the Association of Pathologists of West Virginia at a meeting held in Charleston Sept. 14-15. Dr. Milford L. Hobbs, Morgantown, was reelected secretary.

Professor Dodds Retires.—Gideon Stanhope Dodds, Ph.D., who has been connected with the School of Medicine of West Virginia University since 1918, reached retirement age on July 1. He plans to remain in Morgantown and will devote his time to

V 14
1951

research and writing and will make a special study of student performance in premedical and medical work. Dr. Dodds served also for many years as secretary of the faculty of the school of medicine and for 16 years as chairman of the committee on admissions and scholarship.

WISCONSIN

Cerebral Palsy Center.—An Easter Seal Cerebral Palsy Center is to be set up at the University of Wisconsin, Madison. It will operate for three years at the State of Wisconsin General Hospital with $15,000 provided each year by the Wisconsin Association for the Disabled. Dr. Harold M. Coon, superintendent of the hospital, said that the money will be used to provide specialized technicians and therapists to increase the facilities at the Wisconsin Orthopedic Hospital for Children, and also will set up (1) a coordinated program of examination, evaluation, treatment, occupational and physical therapy, and after care; (2) a school program open to children who have been through the evaluation and treatment phases and no longer require hospitalization, as well as for those in the hospital; (3) a training program for the parents of cerebral palsy children to assist in care and treatment after the children return to their homes; (4) a specialized program for training personnel interested in occupational therapy, physical therapy, and social work programs for cerebral palsied children. The program also visualizes an adequate follow-up program to provide continued treatment and schooling, eventually leading to establishing local centers throughout the state. Kenneth Svee, executive secretary of the Wisconsin Association for the Disabled, and his co-worker, Miss Mary Towne, will assist in the direction of the center.

GENERAL

WHO Adviser to Eastern Mediterranean Office.—Dr. J. D. Cottrell of New Zealand, who has worked in health programs of the United Nations and its specialized agencies in Asia, in Palestine refugee camps, and in Europe, has joined the staff of the WHO Regional Office for the Eastern Mediterranean in Alexandria, Egypt, as public health adviser.

Pan American Field Office in Buenos Aires.—The Pan American Sanitary Bureau, Washington, D. C., regional office of the World Health Organization, has been authorized to establish in Buenos Aires a zone office which will serve Argentine, Chile, Paraguay, and Uruguay. Major field offices of the bureau now in operation are situated in Guatemala, Lima, and Rio de Janeiro. Others are located in El Paso, Texas, and in Kingston, Jamaica.

International Physical Therapist Group.—At the organizational meeting of the World Confederation for Physical Therapy held in September in Copenhagen, Denmark, Miss Mildred Elson, New York, was elected the first president. Objectives of the new organization, representing 15 different nations, are to provide for an international exchange of technical data on physical therapy, to encourage standardization of training and certification in various nations, and to develop methods whereby each of the nations may recruit and train more therapists. Miss Elson is executive director of the American Physical Therapy Association with headquarters in New York.

List of Pamphlets on Rehabilitation.—The library of the National Society for Crippled Children and Adults has prepared a list of 451 pamphlets in print on rehabilitation, a check list of free and inexpensive materials compiled by its library. The society's library loan and reference collection covers all phases of rehabilitation on the care, welfare, education, and employment of the crippled and disabled. Its package service is available without charge to responsible persons and agencies. During the 12-month period ending Oct. 1, the library reproduced for free distribution 17,200 copies of 16 bibliographies on cerebral palsy, psychology, rehabilitation, and special education.

Trudeau Society Papers.—The American Trudeau Society invites the submission of scientific and clinical titles for presentation at its next annual meeting in Boston, the week of May 26, 1952, at the Hotel Statler. All papers will be reviewed by the Medical Sessions Committee for selection of the most interesting material. Subjects for presentation will include all clinical and scientific aspects of tuberculosis, and nontuberculous respiratory and cardiac disease, as well as the results of investigative work with some bearing on these subjects. Papers not selected for reading on the program will be presented by title and read if time permits. Abstracts of titles for this 1952 meeting, or completed papers, must reach the Chairman, Medical Sessions Committee, American Trudeau Society, 1790 Broadway, New York, not later than Jan. 1, 1952.

American Heart Association.—The annual meeting and scientific session of the American Heart Association will be held at the Hotel Statler in Cleveland from April 17-20, 1952. Although scheduled in previous years to precede the annual meeting of the American Medical Association, the American Heart Association sessions will be held for the first time in connection with the annual meeting of the American College of Physicians. As another departure from previous practice, arrangements will be made for a special session to present papers dealing with the basic science aspects of cardiovascular disease. Dr. Irvine H. Page, chairman of the program committee, has announced that those who wish to present papers should submit abstracts before Jan. 1, 1952. Each abstract should not exceed 300 words and should be sent to Dr. Page in triplicate at the Cleveland Clinic, 2020 East 93rd St., Cleveland 6.

Standards for Insecticide Equipment.—The World Health Organization's expert committee on insecticides recently met in Savannah, Ga., and decided on specifications for an insecticide sprayer which will be more readily available in the less industrialized areas of the world. Specifications were also drawn up for two kinds of hand-dusting apparatus, a hand-carried, hand-activated plunger type and a rotary hand duster. The committee also approved a specification chart for spraying apparatus and recommended the chart to the WHO for use in its promotion of insect-control campaigns. The chart gives an evaluation of commercially available equipment based on WHO specifications for each item. Finally, the committee established a standard nomenclature and definition for spraying and dusting apparatus. The meetings were held at the Technical Development Laboratories of the Communicable Disease Center, U. S. Public Health Service, at Oatland Island, Savannah, Ga.

Awards in Pediatrics.—At the annual meeting of the American Academy of Pediatrics in Toronto, Canada, three awards for research in pediatrics were presented. The Borden Award of $1,000 and a medal went to Dr. Daniel C. Darrow, professor of pediatrics, Yale University School of Medicine, New Haven, Conn., for his paper on "Therapeutic Measures Promoting Recovery from the Physiologic Disturbances of Infantile Diarrhea." The first Mead Johnson Award of $1,000 was given to Dr. William McL. Wallace, assistant professor of pediatrics, Harvard Medical School, Boston, for his presentation on "The Chemical Physiology and Pathology of Intracellular Fluids." The second Mead Johnson Award of $500 was presented to Dr. Victor A. Najjar, associate professor of pediatrics, Johns Hopkins University School of Medicine, Baltimore, for his paper on "The Metabolism of Bilirubin and Related Compounds."

Freud Archives Seeks Material.—The Sigmund Freud Archives was incorporated in the State of New York on Feb. 14, 1951. The aim, as stated in the charter, is "to discover, assemble, collect and preserve manuscripts, publications and other documents and information relating to the biography of the late Sigmund Freud, and to his medical, psychoanalytic and other scientific activities." This is the first attempt to preserve for posterity a complete compilation of Freud's writings. Under the agreement with the Library of Congress, which will serve as curator of the collection, confidential material will be restricted as per the request of the donor. The initial projects of the Archives include collecting all letters to and from Freud, establishing a complete and reliable bibliography of his writings, and interviewing all persons who knew Freud personally, regardless of how well they knew him or in what function, whether as friend, brief acquaintance, or as his patient. Dr. Bertram D. Lewin, New York, is president of the Archives. Anybody in possession of letters or who knows of persons who have such letters, as well as all those who knew Freud personally, are urged to contact the Archives at 575 Madison Ave., New York 22.

Rockefeller Foundation Directory.—For the first time since its fellowship program was started 35 years ago, the Rockefeller Foundation has published a directory listing the men and women from 75 countries who have held Rockefeller Foundation fellowships. The program began during the first World War with a few appointments and by 1925 several hundred fellowships were being awarded each year. By now well over 6,000 persons from some 75 countries have held fellowships awarded by the Rockefeller Foundation; the amount expended for this purpose up to the end of 1950 was roughly 19 million dollars. In addition, the foundation has made grants to other organizations for their own fellowship programs; the amount of money expended for that purpose was about 9½ million dollars. The Rockefeller Foundation for many years has operated through five divisions. These divisions and the number of fellowships awarded by each through 1950 were International Health Division, 2,566; Medical Sciences, 1,263; Natural Sciences, 1,219; Social Sciences, 823; Humanities, 471; total, 6,342. The foundation has made appropriations for fellowships administered by other organizations, such as the National Research Council, the Social Science Research Council, and the American Council of Learned Societies, but these organizations have issued their own directories of fellows.

Society Elections.—Officers of the National Gastroenterological Association elected at the meeting Sept. 17-19 in Chicago include Dr. William W. Lermann, Pittsburgh, president; Dr. Felix Cunha, San Francisco, president-elect, and Dr. Ahbrohm X. Rossien, Kew Gardens, N. Y., secretary. The next meeting will be held in New York in October, 1952.——At the recent Chicago meeting of the National Society for Crippled Children and Adults, Mr. Davis E. Geiger, Ashland, Ky., became president succeeding Mr. Gerard M. Ungaro, Chicago attorney. Mr. Geiger was treasurer of the society during 1949 and 1950 and is the immediate past president of the Kentucky Society for Crippled Children. ——The American Academy of Pediatrics meeting in Toronto, Canada, in October installed Dr. Warren W. Quillian, Coral Gables, Fla., as president. Dr. Philip S. Barba, Philadelphia, was elected vice-president and president-elect. Dr. Einor H. Christopherson, Evanston, Ill., continues as secretary.——The American Association of Obstetricians, Gynecologists and Abdominal Surgeons installed Dr. Leroy A. Calkins, Kansas City, as president at their meeting in Hot Springs, Va., in September. Other officers for the year include Dr. Nicholson J. Eastman, Baltimore, president-elect; Dr. Frank R. Smith, New York, treasurer; Dr. William F. Mengert, Dallas, secretary, and Dr. Frank R. Lock, Winston-Salem, N. C., assistant secretary. The 1952 meeting will also be held at Hot Springs the first week in September.——Officers of the Southwestern Medical Association for 1951-1952 include Dr. James S. Walsh, Douglas, Ariz., president; Dr. Wesley O. Connor, Albuquerque, N. M., president-elect, and Dr. Willard W. Schuessler, El Paso, Texas, secretary-treasurer.

Research on Leprosy.—Mr. Perry Burgess, president of the Leonard Wood Memorial (American Leprosy Foundation), which for 25 years has been active in research in leprosy, announces the inauguration of a three-year investigation of the effectiveness of certain drugs, including the sulfones and streptomycin, which have shown promising results. The plan envisages carefully controlled studies carried on at several foreign leprosaria with the cooperation of the governments concerned. Almost 1,000 patients will be included in the first series. Dr. James A. Doull, medical director of the memorial, and Dr. Lucius F. Badger, leprosy control officer of the U. S. Public Health Service, left Sept. 24 for Pretoria, South Africa, where the first unit will be established at the large Westfort Institution under the direction of Dr. A. R. Davison. From Pretoria these two leprologists will travel to Egypt, Ceylon, and India to explore the facilities in those countries, and then to the Philippines, where a unit is to be set up at the Eversley Childs Sanitarium, Cebu, under the direction of Drs. Jose Rodriguez and Jose G. Tolentino. This institution was built 20 years ago by the memorial through a gift from Mr. Eversley Childs, president of the Bon Ami Company. From the Philippines the physicians will go to Japan to observe the advantages offered for such studies in that country. The plans have been arrived at with the aid of a committee of pharmacologists who have voluntarily carried on consultations during the past two years with the medical director and the memorial's advisory medical board. The memorial is making a large contribution of cash and professional services, but such a program could not be undertaken without special financial aid. This has been provided by the U. S. Public Health Service, the Veterans Administration, and by grants of cash, drugs, or both by Abbott Laboratories; American Cyanamid Company (Calco and Lederle Laboratories Divisions); Merck and Company; Parke, Davis and Company; Charles Pfizer and Company; E. R. Squibb and Sons, and Winthrop-Stearns. A substantial contribution also has been received from Pan American World Airways.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States in the weeks ended as indicated:

Area	Nov. 3, 1951	Oct. 27, 1951	Nov. 4 1950
New England States			
Maine	..	..	2
New Hampshire	..	..	..
Vermont	..	..	1
Massachusetts	2	3	26
Rhode Island	1	..	4
Connecticut	4	9	10
Middle Atlantic States			
New York	53	47	157
New Jersey	13	11	23
Pennsylvania	13	29	52
East North Central States			
Ohio	38	41	74
Indiana	4	17	29
Illinois	32	67	63
Michigan	49	39	100
Wisconsin	45	57	37
West North Central States			
Minnesota	23	25	38
Iowa	8	8	31
Missouri	46	18	15
North Dakota	6	1	1
South Dakota	1	1	3
Nebraska	9	9	13
Kansas	28	34	21
South Atlantic States			
Delaware	1	..	1
Maryland	1	15	40
District of Columbia	1	1	4
Virginia	4	8	18
West Virginia	14	22	10
North Carolina	4	6	15
South Carolina	1	2	6
Georgia	17	10	16
Florida	1	7	34
East South Central States			
Kentucky	..	10	12
Tennessee	22	16	5
Alabama	16	19	5
Mississippi	23	26	18
West South Central States			
Arkansas	8	14	4
Louisiana	8	20	8
Oklahoma	9	17	13
Texas	46	56	35
Mountain States			
Montana	5	5	2
Idaho	14	4	4
Wyoming	12	9	1
Colorado	19	8	7
New Mexico	13	3	3
Arizona	7	5	16
Utah	12	31	1
Nevada	1	2	..
Pacific States			
Washington	18	16	27
Oregon	26	15	23
California	125	140	61
Territories and Possessions			
Alaska	..	..	3
Hawaii	..	1	..
United States	809	904	1,092

Addition: Iowa, 7 delayed October cases—not allocated to specific weeks.

Deduction: North Carolina, week ended October 20, 1 case.

V 14
1951

FOREIGN

Middle East Medical Symposium.—The American University of Beirut presented its yearly Middle East Medical Symposium Nov. 9-11. It was sponsored by the United Nations Relief and Works Agency with the collaboration of the World Health Organization, the United States Naval Medical Research Unit, and the United States Army Medical Corps, European command.

VD Control Campaign in Ethiopia.—Under the United Nations Technical Assistance Program, the World Health Organization will shortly launch a venereal disease control project for mass serologic testing and penicillin treatment in Ethiopia. This project, which is expected to start next October, will be conducted by a WHO team consisting of one chief medical adviser, one chief laboratory adviser, and one public health nurse provided with the necessary supplies and equipment. The team will have its headquarters at the Filoha (hot water) Clinic at Addis Ababa.

Congress of Obstetrics and Gynecology.—The 15th congress of the Federation of French Speaking Gynecologists and Obstetricians, will be held in Algiers and Tunis May 5-10, 1952. Subjects for discussion in Algiers May 4-6 are "Prognosis of Hydatidiform Mole," "Diagnosis of Cancer of the Cervix," and "Foetal Anoxia." Moving on to Tunis, the congress will discuss "Combating Dystocia Among the French Speaking Population of Africa." A cruise in the Mediterranean is included in the congress. Those wishing to attend should ask to register as soon as possible. Information may be obtained from Dr. Bonafos, Secrétaire Général du Congrès, 133, rue Michelet, Alger.

DEATHS IN OTHER COUNTRIES

Dr. Samuel Ramirez Moreno, internationally known neurologist and psychiatrist, died in Mexico, April 12 of a heart attack. Dr. Moreno was a member of the Committee of International Relationship of the American Psychiatric Association for four years.——**Dr. Lucien Bovet,** Geneva, Switzerland, member of the medical faculty at the University of Lausanne and consultant of the World Health Organization, died on July 23 in Geneva as the result of an automobile accident.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II,* Jan. 28-30. All centers where there are five or more candidates. Final date for filing application is Dec. 17. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: Various Locations, July 18. Final date for filing application is Jan. 18. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers. Chicago, March 1952. *Oral.* Chicago, May 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May 1952. Final date for filing applications for the May 1952 examination is Jan 1, 1952. Sec., Dr. W. J. German, 789 Howard Ave., New Haven 4, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Feb. 1, 1952. Final date for filing applications was Nov. 1. *Oral.* Chicago, June 9-13, 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Twenty-five centers, Feb. 4-5, 1952. Sec., Dr. Edwin B. Dumphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Final date for filing applications for the 1952 Part II examinations was Aug. 15. Final date for filing application for the 1952 Part I examination is Nov. 30. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

AMERICAN BOARD OF PEDIATRICS: Written examination under local monitors, Jan. 11. This is the only written examination which will be given during 1952. *Oral.* New York City, Feb. 1-3; St. Louis, Mo., April; Washington, D. C., May 3-5; San Francisco, late June; Chicago, October and Boston, late November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Parts I and II.* Chicago, June 9-10. Sec., Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* New York, Dec. 17-18. Final date for filing applications was Sept. 1. Act. Sec., Dr. David A. Boyd Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Spring 1952. Final date for filing application is Dec. 31. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers. March 1952. Final date for filing application is Dec. 1, 1951. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-13, 1952. Final date for filing applications was Sept. 1. Sec., Dr. Harry Culver, 30 Westwood Rd., Minneapolis 16.

MEETINGS

AMERICAN MEDICAL ASSOCIATION CLINICAL SESSION, Los Angeles, Dec. 4-7. Dr. George F. Lull. 535 N. Dearborn St., Chicago 10, Secretary.

AMERICAN ASSOCIATION OF MEDICAL CLINICS, Mayfair Hotel, Los Angeles, Dec. 3-4. Dr. Edwin P. Jordan, Box 114, Charlottesville, Va., Executive Director.

AMERICAN PSYCHOANALYTIC ASSOCIATION, Waldorf-Astoria Hotel, New York, Dec. 6-9. Dr. LeRoy M. A. Maeder, 1910 Rittenhouse Square, Philadelphia 3, Secretary.

ASSOCIATION FOR RESEARCH IN NERVOUS AND MENTAL DISEASES, Hotel Roosevelt, New York, Dec. 14-15. Dr. Clarence C. Hare, 170 Maple Ave., White Plains, N. Y., Secretary.

ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS, Washington, D. C., Nov. 26-30. Dr. John D. Porterfield, 306 Ohio Depts. Bldg., Columbus 15, Ohio, Secretary.

PUERTO RICO MEDICAL ASSOCIATION, Santurce, Dec. 12-16. Dr. Victor J. Montilla, P. O. Box 3866, Santurce, Secretary.

RADIOLOGICAL SOCIETY OF NORTH AMERICA, Chicago, Dec. 3-7. Dr. Donald S. Childs, 713 E. Genesee St., Syracuse 2, N. Y., Secretary.

SOUTHERN SURGICAL ASSOCIATION, The Homestead, Hot Springs, Va., Dec. 4-6. Dr. John C. Burch, 2112 West End Ave., Nashville 5, Tenn. Secretary.

WESTERN SURGICAL ASSOCATION, Broadmoor Hotel, Colorado Springs, Colo., Nov. 29-Dec. 1. Dr. Michael L. Mason. 154 E. Erie St., Chicago 11, Secretary.

INTERNATIONAL

AUSTRALASIAN MEDICAL CONGRESS, Melbourne Victoria, Australia, Aug. 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., East Melbourne, Victoria, Australia, Hon. General Secretary.

COMMONWEALTH AND EMPIRE HEALTH AND TUBERCULOSIS CONFERENCE, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary General.

INTERNATIONAL COLLEGE OF SURGEONS, Madrid, Spain, May 20-24. Dr. Max Thorek, 850 West Irving Park Road, Chicago, Secretary-General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, Mexico City, Mexico, Dec. 11-19. Mrs. Grace E. O'Neill, Division of World Affairs, National Association on Mental Health, 1790 Broadway, New York 19, N. Y.

INTERNATIONAL CONGRESS ON NEUROPATHOLOGY, Rome, Italy, Sept. 8-13. Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. A., Secretary General.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2, England, Hon. Secretary.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Panama City, R. P., Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York, Executive Director.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY, Mexico City, Mexico, Jan. 6-12. Dr. Luis Sanchez Bulnes, Gomez Farias 19, Mexico 4, D.F., Secretary-General.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, Havana, Cuba, Jan. 20-24.

PAN AMERICAN CONGRESS OF PEDIATRICS, Montevideo, Uruguay, Dec. 5-8. Dr. Maria Luisa Saldien de Rodriguez, Avenida 18 de Julio, 1246, Montevideo, Uruguay, General Secretary.

AN AMERICAN MEDICAL WOMEN'S ALLIANCE, Montevideo, Uruguay, Dec. 2-8. Dr. Elizabeth Mason Hohl, 1234 North Vermont Ave., Los Angeles 27, President.

PAN PACIFIC SURGICAL ASSOCIATION CONGRESS, Honolulu, Hawaii, Nov. 7-19. Dr. Forrest J. Pinkerton, Suite 7, Young Bldg., Honolulu, Hawaii, President.

DEATHS

Tuttle, Arnold Dwight ✙ Colonel, U. S. Army, retired, Chicago; born in 1881; University of Maryland School of Medicine, Baltimore, 1906; entered the medical corps of the U. S. Army in 1909; served in the Spanish-American War, Philippine Insurrection, Boxer Rebellion, and World War I; from 1934 to 1937 served as comandant of the Army School of Medicine, Randolph Field, Texas; retired Nov. 30, 1937, at his own request after 30 years' service; joined United Air Lines in 1937 to establish the first fully equipped airline medical department in this country; conducted research on commercial air transportation; on June 1 of this year retired, continuing as medical consultant to United Air Lines; held the Distinguished Service Medal, French Legion of Honor, and Belgian Order of Leopold; received the 1949 John Jeffries Award of the Institute of Aeronautical Sciences and the 1950 alumni award and gold key of the Medical Alumni Association of the University of Maryland; co-founder and first president of the Airlines Medical Directors Association and a past president of the Aero Medical Association; fellow of the American College of Surgeons; member of the Institute of Aeronautical Sciences, Association of Military Surgeons of the United States, and the American Association of Industrial Physicians and Surgeons; died Oct. 6, aged 70, of coronary occlusion.

Carter, Frederick Roy ✙ South Portland, Maine; born in Troy, Maine, July 3, 1877; University of Vermont College of Medicine, Burlington, 1915; secretary-treasurer of the Maine Medical Association from 1937 to June 19, 1951, and served on its council as chairman for one year; president of the Maine Psychiatric Association in 1950; past president and for many years secretary treasurer of the Kennebec County Medical Association; member of the American Psychiatric Association and the New England Society of Psychiatry; assistant superintendent of the Augusta (Maine) State Hospital from 1918 to 1942, when he retired; from 1941 to June, 1951, editor and business manager of the *Journal of the Maine Medical Association;* died Aug. 19, aged 74, of chronic nephritis and coronary occlusion.

Baker, Harry Loyal, Catasauqua, Pa., born April 14, 1886; Hahnemann Medical College and Hospital of Philadelphia, 1910; member of the American Medical Association; county medical director; served overseas with the British Expeditionary Forces during World War I; a captain in the medical attachment of the 213th regiment of the Pennsylvania National Guard for many years; formerly deputy coroner of Lehigh County; secretary of the Catasauqua Board of Health from 1927 to 1934, when he was elected burgess, which office he still occupied at death; member of the board of directors of the Catasauqua Chapter of the American Red Cross and for many years its chairman; on the staff of the Allentown (Pa.) Hospital; died Aug. 17, aged 65, of coronary thrombosis.

Goldfader, Philip ✙ Sherman Oaks, Calif.; born in New York Nov. 28, 1891; Long Island College Hospital, Brooklyn, 1914; specialist certified by the American Board of Urology; member of the Medical Society of the State of New York, American Urological Association, New York Urological Society, and the Williamsburg Medical Society; past president of the Doctors Club of Brooklyn and Brooklyn Urological Society; founding fellow of the International College of Surgeons; for many years practiced in Brooklyn, where he was attending urologist to Unity Hospital and was connected with Brooklyn and Trinity hospitals; died Aug. 23, aged 59, of hypertensive heart disease.

Terrell, Caleb Odhelious, Fort Worth, Texas; University of Texas School of Medicine, Galveston, 1910; member of the American Medical Association and the American Academy of Pediatrics; formerly vice-president of the State Medical Association of Texas; fellow of the American College of Physicians; specialist certified by the American Board of Pediatrics; served during World War I; on the staffs of the All Saints, City and County, Harris, and St. Joseph hospitals; past president of the Texas University Alumni Association; member of the board of regents of the University of Texas, Austin; died July 28, aged 62, of uremia and nephrosclerosis.

McMillan, William Andrew, Charleston, W. Va.; born April 2, 1875; College of Physicians and Surgeons, Baltimore, 1903; member of the American Medical Association; fellow of the American College of Surgeons; past president of the American Association of Railway Surgeons, New York Central Railway Surgeons Association, Kanawha County Medical Society, and the West Virginia Hospital Association; vice-president of the National Bank of Commerce; a past director of the George Washington Life Insurance Company; served as chief surgeon at McMillan Hospital, where he died Oct. 1, aged 76, of cerebrovascular accident.

Hudson, Harry Horatio ✙ Nashville, Tenn.; born in Smithville, Tenn., Nov. 1, 1910; University of Tennessee College of Medicine, Memphis, 1934; assistant in preventive medicine and public health, Vanderbilt University School of Medicine; lecturer in preventive medicine at his alma mater, specialist certified by the American Board of Preventive Medicine and Public Health; member of the American Public Health Association; served as a member of the Rutherford and Bradley counties health departments; director of industrial hygiene, Tennessee State Health Department; died Sept. 8, aged 40, of acute myocardial infarction.

Cort, Parker Martyn, Northampton, Mass.; Harvard Medical School, Boston, 1902; member of the American Medical Association; past president of the Hampden County Tuberculosis and Public Health Association; formerly vice-president of the Massachusetts Tuberculosis League; served during World War I; associate medical director of the Aetna Life Insurance Company in Hartford, Conn. from which position he retired in 1947; formerly affiliated with Mercy and Springfield hospitals in Springfield; died in Cooley Dickinson Hospital Sept. 27, aged 73, of bronchopneumonia, cerebral hemorrhage, and hypertension.

Winslow, Kenelm ✙ Seattle; born in Boston, Aug. 10, 1863; Harvard Medical School, Boston, 1891; an Associate Fellow of the American Medical Association; served during World War I; member of the North Pacific Society of Internal Medicine; at one time on the faculty of his alma mater; surgeon at the Newton (Mass.) Hospital from 1893 to 1900; visiting physician, Kings County Hospital and Seattle City Hospital; author of "Veterinary Materia Medica and Therapeutics," "Production and Handling of Clean Milk" and other publications; died in Swedish Hospital Sept. 5, aged 88, of coronary thrombosis.

Lipscomb, Edwin Jones ✙ Memphis, Tenn.; born in 1886; Vanderbilt University School of Medicine, Nashville, Tenn., 1909; associate professor of orthopedic surgery at the University of Tennessee College of Medicine; member of the Southeastern Surgical Congress and the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; senior attending orthopedic surgeon at Methodist and St. Joseph hospitals, attending surgeon at John Gaston Hospital and on the courtesy staff of Baptist Hospital; died Sept. 10, aged 64, of acute myocardial infarction.

Allen, Bartholomew Manlove ✙ Wilmington, Del.; Medico-Chirurgical College of Philadelphia, 1915; member of the American College of Chest Physicians, Radiological Society of North America, and the American College of Radiology; specialist certified by the American Board of Radiology; member of the House of Delegates of the American Medical Association in 1928; fellow of the American College of Physicians; affiliated with Memorial and Delaware hospitals; consultant, medical division, Dupont Company; died Sept. 7, aged 62, of coronary thrombosis.

✙ Indicates Fellow of the American Medical Association.

V 14
1951

Baccus, Clyde Franklin ✙ Los Angeles; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1911; died in Culver City (Calif.) Hospital Sept. 10, aged 65.

Bendove, Raphael A. ✙ New York; Albany (N. Y.) Medical College, 1922; specialist certified by the American Board of Internal Medicine; member of the American College of Chest Physicians, American Heart Association, and the American Academy of Tuberculosis Physicians; served on the faculties of Long Island College of Medicine in Brooklyn and the New York Post Graduate Medical School and Hospital; on the staff of the Sea View Hospital in Staten Island; died Sept. 21, aged 58, of acute coronary thrombosis.

Benjamin, Marion Wells ✙ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1907; served on the faculty of his alma mater; for many years ophthalmologist for the city board of education; died Oct. 1, aged 66, of chronic myocarditis.

Black, Edward Joseph ✙ Providence, R. I.; Harvard Medical School, Boston, 1908; died in Jane Brown Memorial Hospital Sept. 10, aged 70, of acute myocardial infarction and hypertension.

Briggs, Jesse Howard ✙ Churubusco, Ind.; Rush Medical College, Chicago, 1903; on the staff of the Whitley County Memorial Hospital, Columbia City; member of the board of directors of the Churubusco State Bank; died Sept. 18, aged 70, of carcinoma.

Burton, John William, Mecklenburg, N. Y.; University of Buffalo School of Medicine, 1916; member of the American Medical Association; county coroner; served during World War I; died in the Shepard Relief Hospital, Montour Falls, Sept. 19, aged 63.

Carey, Willard Wayland ✙ Los Angeles; Northwestern University Medical School, Chicago, 1932; served during World War II; affiliated with Hollywood-Leland Hospital, Presbyterian Hospital-Olmsted Memorial, Culver City (Calif.) Hospital, and Santa Monica (Calif.) Hospital; died in Wadsworth Hospital Aug. 11, aged 48, following an operation for brain tumor.

Carr, Gladys Lydia ✙ New York; Tuft's College Medical School, Boston, 1906; specialist certified by the American Board of Radiology; member of the Massachusetts Medical Society and the American College of Radiology; served as director of the radiology department of Meadowbrook Hospital, Hempstead, N. Y.; died in Doctors Hospital, Sept. 14, aged 70.

Chapman, Frederick Joseph, Keokuk, Iowa; Memphis (Tenn.) Hospital Medical College, 1912; member of the American Medical Association; on the staff of Graham Hospital and St. Joseph Hospital, where he died Sept. 14, aged 64, of carcinoma of the liver.

Ciaramelli, Anthony, New York; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1903; member of the American Medical Association; died July 12, aged 73, of pulmonary embolism.

Clemens, Thomas J., Southampton, Pa.; Medico-Chirurgical College of Philadelphia, 1897; for many years on the staff of the Wills Hospital in Philadelphia; died in Mt. Airy, Pa., Sept. 17, aged 80, of myocarditis.

Coeur-Barron, Frederick Herbert Hamilton ✙ Los Angeles; College of Medical Evangelists, Loma Linda and Los Angeles, 1924; affiliated with Methodist Hospital of Southern California, where he died Sept. 24, aged 58, of coronary occlusion.

Cowles, Henry Clay ✙ Pinehurst, N. C.; Columbia University College of Physicians and Surgeons, New York, 1903; member of the Medical Society of the State of New York; an Associate Fellow of the American Medical Association; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; formerly practiced in New York, where he was on the staff of the New York Nursery and Childs Hospital; died Sept. 9, aged 72, of myelogenous leukemia.

Crasson, Louis Francis, Coral Gables, Fla.; Long Island College Hospital, Brooklyn, 1911; served during World War I; died Sept. 7, aged 64, of coronary heart disease.

Crough, Herbert T., Doylestown, Pa.; Albany (N. Y.) Medical College, 1903; member of the American Medical Association; past president of the Bucks County Medical Society; died Oct. 3, aged 72.

Croy, Clayton Churchill, Hancock, Wis.; College of Physicians and Surgeons, Keokuk, Iowa, 1898; died in Wild Rose (Wis.) Hospital Sept. 26, aged 81, of uremia.

Cummins, Thomas J. ✙ Mineville, N. Y.; College of Physicians and Surgeons, Baltimore, 1903; member of the Industrial Medical Association; past president of the Essex County Medical Society; consulting physician to the Physicians Hospital in Plattsburg and to St. Lawrence State Hospital in Ogdensburg; medical superintendent, Mineville Hospital; industrial physician for the Republic Steel Corporation in the Port Henry District; vice-president of the Citizens National Bank of Port Henry; died Sept. 13, aged 74, of coronary occlusion.

Danner, Edgar William ✙ New York; University of Minnesota College of Medicine and Surgery, Minneapolis, 1895; died in Roosevelt Hospital Oct. 4, aged 82.

Dasse, Richard Julius, Logansport, Ind.; Bennett Medical College, Chicago, 1912; on the staff of Logansport State Hospital; died Sept. 22, aged 64, of coronary occlusion.

Dawson, James Henry, Marquette, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885; died in Pomona, Calif., Sept. 2, aged 89.

Doll, Henry John, Buffalo; Eclectic Medical College of the City of New York, 1900; also a pharmacist; for many years identified with the city health department; in 1918 received the degree of LL.D. from Canisius College; died in St. Francis Hospital Sept. 11, aged 79, of arteriosclerotic cardiovascular disease and arthritis.

Drammis, Louis, Chicago; Jenner Medical College, Chicago, 1910; died Sept. 18, aged 83, of terminal pneumonia and arteriosclerosis.

Dugan, Thomas Joseph Jr., ✙ Silver Spring, Md.; George Washington University School of Medicine, Washington, D. C., 1936; member of the Medical Society of the District of Columbia; served during World War II; instructor in anatomy at Georgetown University School of Medicine in Washington, D. C., where he was affiliated with Doctors Hospital and Garfield Memorial Hospital; died suddenly July 17, aged 41, of coronary occlusion.

Duval, Emile Charles ✙ Chicago; Chicago Medical School, 1919; member of the Industrial Medical Association; past president of the Chicago Society of Industrial Medicine and Surgery; affiliated with Chicago Memorial Hospital and Alexian Brothers Hospital, where he died on Oct. 10, aged 77, of sarcoma.

Dykstra, Nicholas Jr., Chicago; Rush Medical College, Chicago, 1920; member of the American Medical Association; on the staff of Roseland Community Hospital; died in Wesley Memorial Hospital Sept. 12, aged 59, of hypertension and myocardial infarction.

Eastman, George Warren, Holliston, Mass.; College of Physicians and Surgeons, Boston, 1905; served during World War I; died in Cushing General Hospital, Framingham, Sept. 26, aged 71, of carcinoma of the sigmoid colon.

Echerer, Tally John ✙ Berwyn, Ill.; Chicago College of Medicine and Surgery, 1916; affiliated with Loretto Hospital in Chicago and MacNeal Memorial Hospital; died Oct. 9, aged 56, of arteriosclerotic heart disease.

Edwards, John Fassett, Kutztown, Pa.; Medico-Chirurgical College of Philadelphia, 1902; member of the American Medical Association; died in Allentown (Pa.) Hospital Oct. 12, aged 82, of cerebral hemorrhage.

Ehrenfeld, Hugo John, New York; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1920; member of the American Medical Association; died July 6, aged 57, of coronary thrombosis.

Emons, Clifford Wallace, Alton, Ill.; St. Louis University School of Medicine, 1924; member of the American Medical Association; served during World War II; fellow of the American College of Surgeons; member of the staffs of St. Joseph's Hospital and Alton Memorial Hospital, where he died Sept. 13, aged 52, of coronary infarction.

Fielden, John S. C. ✙ Fall River, Mass.; Jefferson Medical College of Philadelphia, 1910; served during World War I; affiliated with St. Anne's Hospital, Fall River General Hospital, and the Union Hospital, where he died Sept. 2, aged 63, of coronary embolism.

Finch, Lew Henri ✙ Amsterdam, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1903; past president of the Medical Society of the State of New York and Montgomery County Medical Society; served during World War I; director of the Montgomery Trust Company; on the staff of St. Mary's Hospital and Amsterdam City Hospital, where he died Oct. 5, aged 73, of pneumonia.

Fleitas, Joseph, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1908; on the staff of Germantown Hospital, where he died Sept. 24, aged 64, of coronary occlusion.

Fleming, Forest Elroy, San Francisco; Loyola University School of Medicine, Chicago, 1925; served during World War II; physician for the State Industrial Accident Commission; died Sept. 3, aged 53.

Gardner, Edgar Winfield ✙ Downers Grove, Ill.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1906; specialist certified by the American Board of Otolaryngology; affiliated with Hinsdale Sanitarium and Hospital in Hinsdale, where he died Sept. 6, aged 67, of carcinoma of the bladder with metastases.

Gleysteen, Dirk Van Der Linden, Long Beach, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1895; served during World War I; died Sept. 3, aged 80, of heart failure.

Goddard, Henry S., Vancouver, Wash.; Williamette University Medical Department, Salem, Ore., 1888; College of Physicians and Surgeons, medical department of Columbia College, New York, 1894; died Sept. 9, aged 89.

Goodall, Henry Skinner, Bennington, Vt.; Columbian University Medical Department, Washington, D. C., 1890; medical examiner for the draft board during World War I; on the staff of Putnam Memorial Hospital; died Oct. 5, aged 85, of uremia.

Goudy, Grover Cleveland ✙ Canton, Ohio; Starling-Ohio Medical College, Columbus, 1908; physician at the Stark County Home and the county jail; died in Aultman Hospital Sept. 19, aged 67, of carcinoma of the liver.

Green, Charles W., New York; Columbia University College of Physicians and Surgeons, New York, 1896; died Sept. 2, aged 77, of coronary sclerosis.

Grimes, Charles Henry, Philadelphia; Jefferson Medical College of Philadelphia, 1909; specialist certified by the American Board of Otolaryngology; served on the faculty of Temple University School of Medicine; fellow of the American College of Surgeons; on the staffs of the Stetson and Temple University hospitals; died Sept. 1, aged 67.

Handelman, Louis, Chicago; Northwestern University Medical School, Chicago, 1907; died in Mount Sinai Hospital Sept. 10, aged 68, of coronary heart disease and hypertension.

Hanrahan, Arthur Lawrence ✙ Boston; Boston University School of Medicine, 1931; fellow of the American College of Surgeons; instructor in surgery at his alma mater; affiliated with Massachusetts Memorial Hospitals; died in Cape Cod Hospital, Hyannis, Sept. 7, aged 52.

Harker, Wade Christopher ✙ Chicago; Loyola University School of Medicine, Chicago, 1919; served during World War I; affiliated with the Garfield Park Community and Bethany hospitals; consulting surgeon for the Shriners Hospital for Crippled Children; died in Oak Park Sept. 8, aged 63, of a coronary heart attack.

Harvey, William Thomas, Council Grove, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1897; member of the courtesy staff of Newman Memorial Hospital, Emporia, where he died Sept. 4, aged 83, of arteriosclerotic nephrosclerosis.

Hetherington, Ellery M., Kansas City, Mo.; College of Physicians and Surgeons, Baltimore, 1888; member of the American Medical Association; fellow of the American College of Surgeons; served on the staffs of St. Joseph and St. Luke's hospitals in Kansas City, Mo., and Providence Hospital, Kansas City, Kan.; died Sept. 8, aged 91.

Hooton, Archie Burton, Olar, S. C.; Medical College of the State of South Carolina, Charleston, 1912; formerly health officer of Allendale and Hampton counties in South Carolina and Prince Georges County in Maryland; died in Columbia Sept. 1, aged 63, of cerebral vascular accident.

Hutcheson, Walter R., Greencastle, Ind.; Medical College of Indiana, Indianapolis, 1898; member of the American Medical Association; on the staff of the Putnam County Hospital; died Sept. 23, aged 76, of angina pectoris.

Kempfner, Joseph ✙ New York; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1922; specialist certified by the American Board of Otolaryngology; served during World War II; adjunct professor of otolaryngology, New York Polyclinic Medical School and Hospital, where he was assistant attending otolaryngologist and where he died Oct. 1, aged 53, of subarachnoid hemorrhage, aneurysm of Circle of Willis, and hypostatic pneumonia.

Kimball, Zeb Vance ✙ Hillsboro, Ill.; Marion-Sims Beaumont Medical College, St. Louis, 1902; fellow of the American College of Surgeons; affiliated with Hillsboro Hospital; director of the Hillsboro National Bank; died Sept. 3, aged 71, of paralysis agitans and chronic arthritis.

Kronenberger, Richard Andre, Chicago; Northwestern University Medical School, Chicago, 1948; resident at Michael Reese Hospital; served during World War II; died Oct. 8, aged 33.

Kuhlmann, Alvin Edgar ✙ Union City, N. J.; Columbia University College of Physicians and Surgeons, New York, 1914; served during World War I; on the staff of the North Hudson Hospital in Weehawken, where he died Sept. 13, aged 59, of coronary thrombosis.

Lawson, George McLean, Charlottesville, Va.; Yale University School of Medicine, New Haven, Conn., 1924; professor of preventive medicine and bacteriology at University of Virginia Department of Medicine; formerly professor of public health and bacteriology at the University of Louisville (Ky.) School of Medicine; member of the American Association of Pathologists and Bacteriologists and the American Public Health Association; member of the city board of health; died Sept. 20, aged 53, of arteriosclerosis with cerebral accident.

Lind, Carl J., Minneapolis; Medical Department of Hamline University, Minneapolis, 1897; also a pharmacist; member of the American Medical Association; affiliated with Swedish Hospital; one of the founders and member of the board of directors of the Minnehaha State Bank; died July 21, aged 78, of heart disease.

Loring, Mark Lucas ✙ Valparaiso, Ind.; Rush Medical College, Chicago, 1926; served during World War II; died in September, aged 51.

McConachie, Alexander Douglas ✙ Baltimore; University of Maryland School of Medicine, Baltimore, 1890; an Associate Fellow of the American Medical Association; served on the staff of the Church Home and Infirmary; died Sept. 21, aged 87, of angina pectoris.

McCullough, Walter Arlington, Daytona Beach, Fla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1917; member of the American Medical Association and the Medical Society of New Jersey; served during World War I; formerly practiced in Montclair, N. J., where he was on the staffs of Mountainside and St. Vincent's hospitals; served on the staff of the Essex County Overbrook Hospital in Cedargrove, N. J.; died Sept. 17, aged 58, of a heart attack.

V 147
1951

McEvoy, Sanford Henry ✙ Enid, Okla.; University of Western Ontario Faculty of Medicine, London, Ontario, Canada, 1900; past president of the Garfield County Medical Society; associated with Enid Clinic and Enid General Hospital; died Sept. 13, aged 81.

McGuire, Michael Francis, Chicago; National University of Ireland, Dublin, 1911; clinical professor of surgery at Loyola University School of Medicine; fellow of the American College of Surgeons; served during World War I; on the staff of Mercy Hospital; died Sept. 26, aged 64, of coronary thrombosis.

McMillan, Lonnie Malcolm, Mullins, S. C.; Medical College of the State of South Carolina, Charleston, 1915; founder of Mullins Hospital, where he died Sept. 3, aged 63.

Maus, John Peter, Philadelphia; Medico-Chirurgical College of Philadelphia, 1909; served during World War I; formerly associated with the Veterans Administration; associate urologist, Episcopal Hospital; died in Philadelphia General Hospital Sept. 23, aged 68, of bronchopneumonia and cerebral hemorrhage.

Meeker, Frank Butler, Newark, N. J.; Baltimore Medical College, 1899; also a graduate of the school of pharmacy; in 1892 one of the founders of the New Jersey College of Pharmacy, which in 1927 affiliated with Rutgers University, where he was financial secretary until the time of his death; formerly member of the board of trustees, vice-president, financial secretary, member of the advisory committee, and registrar at the New Jersey College of Pharmacy; died in the Presbyterian Hospital, Sept. 4, aged 84, of hemorrhage due to duodenal ulcer.

Milligan, Margaret Reinhart ✙ Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1924; certified by the National Board of Medical Examiners; on the staff of Woman's Hospital; died Sept. 22, aged 53.

Morgan, Harry Michael, Longview, Wash.; Northwestern University Medical School, Chicago, 1933; member of the American Medical Association; served during World War II; affiliated with St. John's Hospital; died Sept. 20, aged 46, in an airplane accident.

Mulligan, Bernard Edward, Yonkers, N. Y.; Albany (N. Y.) Medical College, 1894; Bellevue Hospital Medical College, New York, 1895; for many years health officer; died Sept. 23, aged 80.

Myers, Brayton Omar, Washington, D. C.; George Washington University School of Medicine, Washington, D. C., 1928; member of the American Medical Association; died Sept. 16, aged 49, of coronary thrombosis.

Overman, Frederick Vaile ✙ Tipton, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; member of the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Otolaryngology; past president and secretary of the Indianapolis Society of Ophthalmology and Otolaryngology; served as secretary of the Indiana Academy of Ophthalmology and Otolaryngology; died Sept. 11, aged 73, of cerebral hemorrhage and hypertension.

Paige, La Verne D., Spring Creek, Pa.; Baltimore Medical College, 1898; served on the staff of Corry Memorial Hospital in Corry; died Sept. 3, aged 81, of myocarditis and carcinoma of the larynx.

Peden, Barton Edward ✙ Seattle; University of Oregon Medical School, Portland, 1925; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Oto-Ophthalmological Society; for many years secretary of the Puget Sound Academy of Ophthalmology and Otolaryngology; served during World War I; lieutenant commander, medical corps, U. S. Naval Reserve, retired; died Sept. 2, aged 55, of cardiac decompensation.

Puckett, William M., Irwinton, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1912; died Aug. 8, aged 75.

Roble, Andrew, Chicago; Northwestern University Medical School, Chicago, 1924; served during World War II; died Sept. 26, aged 55, of chronic myocarditis.

Rogier, Henry Oliver ✙ Mason City, Ill.; St. Louis University School of Medicine, 1906; affiliated with Memorial and St. John's hospitals in Springfield, St. Francis Hospital in Peoria, and Evangelical Deaconess Hospital in Lincoln; died July 17, aged 70, of coronary thrombosis.

Round, Frederick Lutwyche ✙ Holden, W. Va.; Jefferson Medical College of Philadelphia, 1902; co-founder of Holden Hospital; died Sept. 23, aged 79, of cerebral hemorrhage and arteriosclerosis.

Rowell, William Arthur, Berkeley, Calif.; Cooper Medical College, San Francisco, 1891; member of the American Medical Association; died Sept. 10, aged 83.

Ryan, William Cyril, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1906; police and fire surgeon; past president of the International Association of Police and Fire Surgeons; served in France during World War I; died in Philadelphia General Hospital Sept. 22, aged 69, of arteriosclerotic heart disease.

Sampson, May Hannah ✙ Berkeley, Calif.; Cooper Medical College, San Francisco, 1906; on the staff of Alta Bates Hospital, where she died Sept. 21, aged 80, of coronary artery disease.

Sayles, Charles Frederick, Miami, Fla.; University of Georgia School of Medicine, Augusta, 1908; for many years on the staff of Jackson Memorial Hospital; fellow of the American College of Surgeons; died in Little Switzerland, N. C., Sept 2, aged 68.

Schoonmaker, Irving R., Philadelphia; Jefferson Medical College of Philadelphia, 1884; member of the American Medical Association; served on the staffs of Children's and Presbyterian hospitals; for many years on the staff of Philadelphia General Hospital, where he died Sept. 14, aged 95, of bronchopneumonia.

Schupmann, Martin August ✙ Chicago; Bennett Medical College, Chicago, 1909; affiliated with Roosevelt Memorial Hospital, where he died Sept. 20, aged 64, of acute coronary occlusion, diabetes mellitus, and hypertension.

Shaw, George Adelbert ✙ Manistique, Mich.; Northwestern University Medical School, Chicago, 1926; fellow of the American College of Surgeons; member of the Industrial Medical Association; member and past president of the board of education; president of the board of directors of the First National Bank of Manistique; director and owner of Shaw Hospital; died Oct. 1, aged 57.

Sigworth, Fred Byres, Anamosa, Iowa; Rush Medical College, Chicago, 1900; member of the American Medical Association; killed in a highway accident near Wyoming, Aug. 26, aged 77.

Squier, Raymond Roscoe ✙ Greenwich, Conn.; Johns Hopkins University School of Medicine, Baltimore, 1926; member of the American Psychosomatic Society; specialist certified by the American Board of Obstetrics and Gynecology; served as executive secretary of the National Committee on Maternal Health; on the staff of Greenwich Hospital; died in New York Sept. 17, aged 52.

Steinmetz, Deacon, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1895; associate professor of surgery at his alma mater; on the staff of Hahnemann Hospital, where he died Sept. 8, aged 77, of arteriosclerotic heart disease.

Welch, Aloysius Casimir ✙ Chaptico, Md.; Georgetown University School of Medicine, Washington, D. C. 1929; died recently, aged 46, of accidental paraldehyde poisoning.

DIED WHILE IN MILITARY SERVICE

Hoke, Wilbur Joseph, St. Louis; St. Louis University School of Medicine, 1931; member of the American Medical Association; practiced in St. Louis, where he was on the courtesy staff of Faith Hospital and member of the staff of Christian Hospital; served during World War II; on Jan. 15, 1951 reentered the medical corps of the U. S. Naval Reserve as a lieutenant commander on the *USS Repose*, on which he died July 15, aged 45, of injuries received in a jeep accident in Korea.

GOVERNMENT SERVICES

AIR FORCE

Personal.—Maj. Burt Rowen, of the Air Force School of Aviation Medicine, has been ordered to Stockholm, Sweden, for duty as Assistant Air Attache. Major Rowen, a native-born New Yorker, is one of only three officers in the Air Force who hold the triple rating of flight surgeon, pilot, and parachutist.

DEPARTMENT OF DEFENSE

38th Parallel Medical Society.—A unique medical society, said to be the first of its kind ever to be organized on the battlefield, is now holding regular meetings near the Korean front in the interest of providing the world's best medical care to United Nations forces. The organization, called the 38th Parallel Medical Society, makes possible the dissemination of newly developed techniques throughout Korea in a matter of days. Particular attention is given to improvement and coordination of battlefield treatments.

Doctors from 11 UN nations and from many of the large military organizations in Korea attend regularly and hope to discover solutions to many combat medical problems through their discussions. Nations represented in the society include the United States, Greece, South Korea, Thailand, the Philippine Islands, Australia, Canada, Great Britain, Norway, Sweden, and Belgium.

NAVY

Navy Offers 176 Internships.—The Navy announced Oct. 4 that it would make 176 naval hospital internships available to medical school students graduating in 1952. The deadline for the submission of applications is Jan. 7, 1952.

Prospective interns must meet all requirements for a commission in the Medical Corps, U. S. Naval Reserve, and must serve a minimum of 24 months of active duty from the date they start intern training.

Applications will be accepted in accordance with the plan for internship appointments of the National Inter-Association Committee on Internships. Candidates will be notified whether they have been selected during the period March 14-31, 1952. Appointees will also receive notice of assignment to a naval hospital at that time.

Successful appointees will be commissioned lieutenant (j. g.), and will receive pay and allowances in that rank during their internship. When ordered to other duty on completion of internship, they will qualify for an extra $100 per month.

Other benefits include a $250 uniform allowance, transportation for dependents and household effects to duty stations, and opportunities for advanced professional training.

Information may be obtained by writing to the Surgeon General of the Navy, Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

PUBLIC HEALTH SERVICE

Examination for Bacteriologist.—An examination for appointment of bacteriologists to the regular corps of the Public Health Service will be held on Jan. 15-17, 1952, at a number of points throughout the United States. Applications must be received no later than Dec. 11, 1951.

Appointments will be made in the grades of assistant scientist and assistant sanitarian (equivalent to Navy rank of lieutenant [j.g.]) and senior assistant scientist and senior assistant sanitarian (equivalent to lieutenant). Consideration is given to the officer's preference, ability, and experience; however, all commissioned officers are subject to change of station and assignment as necessitated by the needs of the service. Appointments are permanent and provide opportunities for qualified bacteriologists to pursue their profession as a life career in research and public health activities.

All candidates must be United States citizens at least 21 years of age. Entrance pay for assistant scientist and assistant sanitarian with dependents is $4,486.56 per annum; for senior assistant scientist and senior assistant sanitarian with dependents, $5,346. These figures include subsistence and rental allowance. Officers on active duty are not eligible to receive disability compensation from the Veterans Administration.

Provisions are made for promotion at regular intervals up to and including the grade of senior scientist (commander) and for promotion by selection to the grade of scientist director (captain); provisions are also made for promotion at regular intervals up to and including the grade of sanitarian (lieutenant commander) and for promotion by selection to the grade of senior sanitarian (commander) and sanitarian director (captain).

Further details and application forms may be obtained by writing to the Surgeon General, United States Public Health Service, Washington 25, D. C., Attention: Division of Commissioned Officers.

Regular Corps Examination for Medical Officers.—An examination for appointment of medical officers to the regular corps of the United States Public Health Service will be held on February 5-7, 1952. Applications must be received no later than Jan. 2, 1952.

Appointments will be made in the grades of assistant surgeon and senior assistant surgeon. Commissioned officers are subject to change of station and assignment as necessitated by the needs of the service. Appointments are permanent and provide opportunities to qualified physicians for a life career in clinical medicine, research, and public health.

Requirements for both grades are United States citizenship and graduation from a recognized school of medicine. Applicants must be at least 21 years of age.

Applicants for the post of assistant surgeon must have had at least seven years of educational training and professional experience subsequent to high school. Applicants for the post of senior assistant surgeon must have had at least 10 years of educational training and professional experience subsequent to high school.

Entrance pay for an assistant surgeon with dependents is $5,686.56 per annum; for senior assistant surgeon with dependents, $6,546. These figures include the $1,200 annual additional pay received by medical officers as well as subsistence and rental allowance. Officers on active duty are not eligible to receive disability compensation from the Veterans Administration.

Provisions are made for promotion at regular intervals up to and including the grade of senior surgeon and for promotion by selection to the grade of medical director. Retirement pay after 30 years of service or at the age of 64 is three-fourths of annual basic pay at the time of retirement.

Application forms and additional information may be obtained from the Surgeon General, United States Public Health Service, Federal Security Agency, Washington 25, D. C., Attention: Division of Commissioned Officers.

Communicable Disease Meeting.—More than 275 Public Health Service officers attended the Ninth Annual Communicable Disease Center fall meeting, Oct. 15-17, at the Academy of Medicine, Atlanta, Ga. More than 60 speakers led discussions which began with a panel on the part played by the Communicable Disease Center in the present emergency. Participants reported on epidemic intelligence activities, airborne agents of disease, techniques for sampling the biological content of the air, and the public health aspects of disease of animals which may be transmitted to man. Other discussions treated typhus and rodent control, and fly control investigations.

V 14
1951

Other panels were concerned with water resources development activities, public health field training, current investigations on encephalitis, statistical services available through the center, recent laboratory developments, pest control studies, and Q-fever investigations.

Panel discussions during the last day of the meeting were concerned with malaria in the United States, ringworm of cattle and chickens, the CDC mycological investigations program, new training programs of the Center, and the chemistry and toxicology of economic poisons.

German Physicians.—Nine more German physicians arrived in the United States in October for one year of advanced training under programs supervised by the Division of International Health of the Public Health Service. The training is conducted under a fellowship plan sponsored by the U. S. High Commissioner of Germany.

Progress in Hospital Construction.—During the third quarter of 1951, health centers constituted an unusual proportion of the construction projects receiving initial approval under the Hill-Burton Hospital Survey and Construction Act. Of 54 new projects receiving approval from the Public Health Service during the quarter, 15 were health centers. Except for one in Spokane, Wash., all were to be located in rural areas and the majority were in Kentucky and Tennessee.

The 54 new construction projects approved during the quarter ending Sept. 30, 1951, would add 2,529 hospital beds and bring the total number of beds added by Hill-Burton projects to 78,468. The estimated cost of the 54 projects receiving approval is $40,684,000 of which the estimated Federal share is $16,845,000. During the third quarter, 28 hospitals, health centers, and other related facilities were completed and began operation. The total number of projects in this category is now 499. These completed projects have made 15,365 beds available for use by the public. At the end of the third quarter, 999 projects were under construction, which would provide an additional 56,433 beds when they are completed.

Average Length of Life.—The average length of life in the United States has increased to a record high of nearly 68 years, the Federal Security Administrator announced October 19. The new figure, based on final 1949 vital statistics compiled by the Public Health Service, shows a gain of almost half a year over the average lifetime indicated by 1948 death rates.

White women on the average live longer than any other group, outliving white men by more than five years. The average lifetime expected for white women at birth is 71½ years, while the average for white men is 65 years 11 months.

Negroes and other nonwhite groups have a shorter average life—58½ years for nonwhite men and 62 years 11 months for nonwhite women. Although white persons live longer than nonwhite, the difference has been sharply reduced. In 1900, whites outlived nonwhites by an average of about 15 years, compared with about 8 years in 1949.

While the expectation of life at birth has increased by more than 20 years since the turn of the century, there has been no significant change in the average lifetime remaining to those who have reached age 65 or 70.

Shortage of Nurses in Tuberculosis Hospitals.—Dr. Leonard A. Scheele, Surgeon General of the Public Health Service, said Oct. 12 that many tuberculosis patients are receiving inadequate hospital care because of a shortage of nurses in the nation's tuberculosis hospitals and services. He stated further:

> The situation is extremely acute. There are approximately 320,000 civilian nurses employed in all types of services today, but there is room for 65,000 more. . . . Now that treatment for the disease includes not only rest, but extensive chemotherapy and surgery, almost as many nurses are needed in tuberculosis as in general hospitals.

The problem in tuberculosis hospitals is owing in part to the nationwide shortage of nurses, which has resulted in stiff competition for their services, but it is owing also to unfavorable working conditions in many tuberculosis hospitals, Dr. Scheele said. In many cases, inadequate patient care can be traced to inferior hospital facilities, unsatisfactory personnel policies, and insufficient personnel and patient education. There is only one professional nurse for every 10.6 tuberculosis patients, whereas in general hospitals there is one professional nurse for every 2.5 patients. The causes underlying the current situation are discussed in an article in the Oct. 5 issue of *Public Health Reports*.

Heart Disease and Cancer in School Children.—Statistics reveal that deaths from heart disease and cancer among children of school age exceed in number deaths from all infections and parasitic diseases combined, the Federal Security Agency announces.

In 1948, the latest year for which complete figures are available, the study revealed that cardiovascular disease and cancer deaths totaled 4,514 in the 5 to 19 year age group. In comparison, the infectious and parasitic diseases accounted for 3,990 deaths in the same age group.

Dr. Leonard A. Scheele, the Surgeon General, said "Actually, there has been an over-all decline in the number of all deaths from diseases in childhood, including those due to both heart disease and cancer. But the decline in the infectious and parasitic diseases has been overwhelmingly greater. This can be attributed for the most part to the antibiotics and improved measures for detecting and preventing these diseases."

The report shows that the death rate from infectious and parasitic diseases in the 5 to 19 year age group dropped from 48.2 per 100,000 in 1933 to 11.5 per 100,000 in 1948. During the same period heart and cancer deaths in the group dropped from 19.8 to 13.0 per 100,000 persons. Accidents, however, continue as the leading cause for all deaths in the age group, totaling 11,348 in 1948, or a rate of 32.8 per 100,000 children.

Training for French-Speaking Fellowship Students.—To help meet the language problem of French-speaking nurses from South East Asia or Middle East countries in public health training programs under Point IV or ECA auspices, the Nurse Consultant of the Division of International Health recently investigated possible facilities in Montreal and Quebec for such training. Canadian nursing authorities expressed a desire to cooperate in the training of French-speaking nationals from other countries, and the Departments of Health in Montreal and Levis and the Provincial Ministry of Health in Quebec offered to assist.

Qualified nurse leadership is available in the Canadian Nurses' Association, the Schools of Nursing at the Institute Marguerite D'Youville and Notre Dame Hospital, the School of Hygiene, University of Montreal, and McGill University. The School of Nursing, Institute Marguerite D'Youville, is affiliated with the University of Montreal and offers advanced programs of study leading to a B.S. degree in Administration of Nursing Services and Administration of Schools of Nursing. The School of Nursing, Notre Dame Hospital, offers a three-year basic nursing education program. Both schools have good classrooms, laboratories, and teaching equipment. The directors were found to be eager to cooperate in the training of foreign students.

Problems similar to those in this country are encountered in Canada in securing adequate field training for public health students. The Montreal City Health Department offers good nursing field experience under qualified supervision. At present there are 150 nurses, including the director, eight supervisors, and an educational director in public health nursing in the Montreal Department of Public Health. County health departments in parts of the provinces of Manitoba and Ontario, where French is spoken, might also be used in training the French-speaking nurses from other parts of the world.

MISCELLANEOUS

Appointment of Dr. Dammin.—Dr. Gustave J. Dammin has been appointed consultant for laboratories services to the Health and Special Weapons Defense Division, Federal Civil Defense Administration, Washington, D. C. Dr. Dammin is head of the department of pathology, School of Medicine, Washington University, St. Louis, Mo. He served with the U. S. Army as commanding officer of the Puerto Rican Department Laboratory; executive officer and parasitologist for the Dysentery Commission in the India-Burma Theater; director of the Laboratory Division, Office of the Surgeon General, and member of the Influenza Mission to Germany; and is civilian consultant to the Surgeon General. He received the Legion of Merit for dysentery work in the India-Burma Theater.

FOREIGN LETTERS

LONDON

Conference on Corticotropin (ACTH).—A conference on corticotropin, arranged by the Armour Laboratories, was held at Harrogate on September 13 and 14. The conference was attended by over 100 physicians and surgeons, all of whom had practical experience in the use of the drug. Members were welcomed at a reception by Councillor N. A. Foster, mayor of Harrogate, and Mr. A. M. Fletcher, managing director of the company.

Control of Dosage.—Dr. O. Janus (Manchester) described the eosinopenic response to corticotropin, which he considered a good test of adrenal function. By the use of a careful technique the test could be used quantitatively. Evidence had been gained by the prolonged study of four normal subjects that there was an individual variation in response to a standard dose. A similar variation was noted among patients treated with corticotropin. There was not always a correlation between the way a person responded clinically and the response to test doses. Dr. C. L. Cope (London) confirmed these findings and said there was a variable adrenal response to corticotropin, as shown by bioassay of cortisone and of compound F in urine. Dr. A. Slessor (Glasgow) said that the main object in treating a patient was to give enough corticotropin to flood the body with excess adrenal hormones, without there being undesirable metabolic side-effects, such as retention of salt and water, muscle weakness from potassium loss, the appearance of Cushing's syndrome, liability to thrombosis and priapism in the male, which occurred with high doses. Corticotropin therapy could be dangerous if the patient had tuberculosis or some form of psychosis, diabetes, chronic nephritis, or heart failure. A daily record of weight and blood pressure and frequent eosinophil counts were the most useful methods of following a course of therapy. Periodic electrocardiograms were a good way to detect significant potassium loss. Dr. R. R. H. Lovell (London) said that every patient needed a certain dose to suppress his disease. This dose, in any one patient, may also give rise to harmful side-effects. Other speakers were in agreement with the concept of a critical dose for each patient and each disease process. Dr. Cope (London) pointed out that the eosinophil count could increase with adequate adrenal stimulation, and repeated counts had a limited value in assessing treatment.

Gastrointestinal Disease.—Dr. J. R. Forbes (Wrexham) thought there was some evidence that corticotropin increased pepsin secretion, although he found no change in acid secretion. Five gastric ulcer patients showed no change with a course of corticotropin. Dr. Forbes thought that the drug had not been proved responsible for gastric perforation. In another series of five cases of ulcerative colitis he thought there might have been slight quickening toward healing. Dr. D. H. MacQuaide (Northampton) was of the opinion that corticotropin improved fat absorption in cases of steatorrhea.

Asthma and Dermatomyositis.—Prof. F. J. Nattrass and Dr. A. L. Latner (Newcastle) said it was difficult to assess the value of corticotropin therapy in asthma. They had given 25 mg. every six hours to 13 patients in status asthmaticus. There had been decisive clinical improvement. A similar improvement was noted in some chronic asthmatics. In their opinion the drug was no substitute for careful use of epinephrine, but it should be used if epinephrine failed, especially in status asthmaticus. The immediate results of short-term therapy were impressive, but there were as yet no long-term remissions. Dr. S. Johnsson (Sweden) confirmed these findings. Dr. D. V. Hubble (Derby) described the clinical course during the treatment of a case of acute dermatomyositis. When intravenous drip therapy was continued daily for eight-hour periods, there was a tendency to edema.

Simmonds' Disease.—The treatment of five patients with Simmonds's disease was reported. Considerable clinical improvement was shown, especially freedom from hypoglycemia. The improvement was maintained for about three months after the course. Another speaker reported similar improvement, especially in diuretic response to water, which become normal after corticotropin therapy. Another speaker found that there was no eosinopenic response in Simmonds' disease. However, small doses of cortisone produced marked eosinopenia. Dr. E. G. L. Bywaters (Taplow) described a carefully controlled study of rheumatic fever. He was unable to assess long-term results. Corticotropin seemed to suppress symptoms, but symptoms recurred if treatment was stopped while the disease was still active. He had experimented with the spreading effects of hyaluronidase, which was inhibited by corticotropin but not by cortisone. In rheumatic fever there was an abnormally long time taken by the body to reconstitute its resistance to the spreading effect. Corticotropin did not alter this. Dr. W. G. Welch (London) was impressed by the quick suppression of symptoms in rheumatic fever by the drug. The intravenous use of corticotropin was recommended, as it gave better results. As in all therapy, the treatment should be started as soon as possible and effective doses should be given.

Hypoglycaemia and Rheumatoid Arthritis.—Speakers described good clinical response to hypoglycemia in a large number of patients. The response did not always run parallel to the response to cortisone. Several cases of rheumatoid arthritis were described, which had not responded to corticotropin therapy. It was thought that these rare failures might prove material for research into the action of adrenal hormones. Experimental work on guinea pigs had shown that thyroxin deficiency or ascorbic acid lack might result in a failure of corticotropin action. It was possible these findings were applicable to humans.

Blood Diseases.—Prof L. J. Witts (Oxford) reported remission in some cases of acute leukemia. The great majority, however, were refractory to corticotropin. There was no response to the drug in acute monocytic leukemia or in the chronic leukemias. Sarcoidosis also showed no improvement. Corticotropin was possibly of some use in acute exacerbations of sarcoidosis. Professor Witts had found no definite benefit from it in congenital hemolytic anemia, hemoglobinuria, and thrombocytopenic purpura. Episodes of bleeding in thrombocytopenia could be stopped with the drug even if there was no change in the thrombocyte count. He thought this was probably due to a rise in capillary resistance caused by corticotropin. There was occasional improvement in acquired hemolytic anemias, but results were disappointing. Rare cases of resistant anemias appeared to respond. Another speaker reported seven cases of lymphoid reticulosis treated with corticotropin without any beneficial result. He considered that a malignant change in one case might have been caused by corticotropin. Other speakers reported these findings, and all seemed in agreement that the anemia of rheumatoid arthritis did not respond to corticotropin.

Capillary Resistance and Adrenocortical Activity.—Two speakers were of the opinion that adrenal activity increased capillary resistance by the action of 11-oxysteroids. This paper was followed by a detailed discussion of the significance of these results and the possible mechanisms involved.

Pituitary Adrenocortical Activity in Burns.—Dr. S. Sevitt, of Birmingham, reported eosinopenia following burns. He considered this to be due to adrenal activity. The duration of the eosinopenia was relative to the extent of the burns. In analyzing burn fatalities it was shown that eosinopenia indicated active adrenals in most of the cases. Dr. Sevitt thought it possible that patients showing mental instability might have a poor eosinopenic response to epinephrine as they were recovering from their burns. Dr. Cope (London), who had investigated adrenal function in fatal medical conditions, was not of the opinion that death was due to adrenal failure, except perhaps in overwhelming infections. An appeal was made by one speaker that a closer study should be made of the mechanism of the adrenal steroids within the cells.

The items in these letters are contributed by regular correspondents in the various foreign countries.

V 14
1951

Corticotropin in Rheumatoid Arthritis.—Dr. B. Wolman (Manchester) had used the eosinopenic response to corticotropin as an indication of adrenal activity in the first day of life. He found that most full-term and premature babies showed a normal response. Failure to respond until the second day or later appeared to be linked with a low birth weight. Drs. W. S. C. Copeman and O. A. Savage (London) discussed difficulties in the management of rheumatoid arthritis cases. They cited one case in which severe temporary diabetes developed. They thought that the lowest daily maintenance dose was 40 mg. Intravenous administration was useful when response to intramuscular therapy was poor, but veins became easily thrombosed. It was possible to follow treatment by a carefully planned clinical routine. They cautioned that the patient's euphoria made subjective assumption of improvement difficult. There were no antibodies to corticotropin found in the blood. One physician from Paris stressed the dramatic improvement of patients who had been bedridden. He thought continuous treatment to be necessary.

Recent American Experience.—Dr. H. E. Cluxton (Armour Laboratories, Chicago) summed up the work of the conference. He thought that, in the light of recent American experience with corticotropin, it would be increasingly useful to the surgeon in combating postoperative conditions. Corticotropin in combination with streptomycin and paraaminosalicylic acid appeared to be of great use in tubercular meningitis and renal tuberculosis. Eye conditions responded well, and the drug appeared useful in the treatment of diabetic retinitis. Dr. Cluxton stressed the importance of preventing potassium depletion, of giving thyroid to patients who were on long-term therapy, and, finally, the correct and prompt use of antibiotics when infection occurred during the course of therapy. Early use of the drug was essential in suitable cases. Slow diminution of dosage when stopping the therapy should always be carried out.

European Committee for Mental Hygiene.—The seventh conference of the European Committee for Mental Hygiene was held at Vevey, Switzerland, August 30 to September 3. Dr. André Répond, director of the Mental Health Services for the Canton of Valais and past president of the World Federation for Mental Health, presided. The conference was the first of its kind since World War II. There were some 70 members and delegates from 13 countries, including Great Britain, Italy, Austria, and Western Germany. On the first day, representatives outlined the mental health services in their own countries, and on the second day there were reports dealing with special problems of mental hygiene.

Dr. Ronald Hargreaves, chief, Mental Health Section, World Health Organization, reported on the concept of mental hygiene in that organization. They held the view, he said, that mental hygiene could play the same role in the sphere of mental health and disease as physical hygiene played in the physical sphere. The doctor's role in the mental sphere was to treat the sick and to make researches into the nature and cause of mental illness and mental deficiency. A reduction in the incidence of mental disorders could be achieved only by those dealing with the causative factors in the general population. This group includes teachers, ministers of religion, and all those who dealt with the development and welfare of their fellows.

Geographic Variation in Incidence of Psychoses.—In a special survey, it was found that in Italy, although there was a high consumption of alcohol, there was a very low incidence of alcoholic psychosis. Such was not the case in other European countries. Northern Sweden showed an increase in schizophrenia in relation to other psychoses. In South Sweden, manic-depressive psychoses predominated. In African tribes, only the men have manic-depressive psychoses, and this usually occurs when they are working with white men. Even the limited research carried out showed that the problems of mental hygiene varied greatly between one country and another. It also showed that an understanding of the fundamental and contributory factors of mental illness was essential before one could advocate or take measures to deal with it. In the field of child psychiatry and developmental psychology, it might be possible to discover the basic cause of mental illness. From the point of view of prophylaxis, little good was served by studying mental disease as a fully established condition.

Resolutions and Future Work.—Resolutions were passed unanimously, urging that education in the problems and the application of mental hygiene should be as widespread as possible. First, they should be addressed to study groups such as members of the medical profession, teachers, nurses, psychologists, social workers, the clergy, officials in public health services, and magistrates. Second, a resolution was passed, based on the evidence from the delegates that guidance and advice for those about to marry and for expectant mothers, child guidance clinics, and clinical and advisory facilities for adults in the mental health field were found most efficacious in preventing nervous and mental disorders and character deviations.

PARIS

First Congress on Rural Medicine.—The Association for Rural Medicine, founded by a team of rural physicians, held its first congress, under the presidency of Professor Joannon, at Limoges, a town located in an essentially rural area, on June 2 and 3, 1951. Dr. Gamard, in his study on the training of the country doctor, suggested, among other things, that the candidate for medical studies ought to submit to a psychological examination. The future country doctor must take an interest in the whole of the medical knowledge during his training, as, later, nothing of it must be foreign to him in rural practice. Dr. Carlotti said graduate training is essential to the country doctor, who has difficulty in keeping himself informed of medical developments. Two types of graduate courses are available, information conferences and periods of instruction in hospitals. The former could be given within regional professional societies by a chosen lecturer and followed by discussions. The periods of instruction would last one week per year and consist of clinical presentation of patients, a lecture course, and the demonstration of new methods, with free discusison. Drs. Mouchot and Nedelec studied team medicine practiced in a voluntary association; it would provide the best care for the patient at a reasonable cost. Dr. Cuvier discussed the problem of human tuberculosis of bovine origin. He stressed the usefulness of vaccination of humans and animals with BCG. In his study on the same subject, Professor Pierre insisted on the necessity of close collaboration among the physician, the veterinary surgeon, and the agronomist in the prophylaxis of this economic and social scourge, as contamination may occur by various channels: cattle, poultry, and even humans. A regular medical control of the staff is necessary as well as improvement in the hygiene of food and of stables. The isolation of animals reacting to tuberculin till their removal to the slaughterhouse, the keeping of healthy calves only, and buying of only tuberculin-negative animals were discussed.

Tuberculous Meningitis and Streptomycin.—Streptomycin has completely changed the prognosis of tuberculous meningitis; Professor Rist, in a systematic study of the world literature prior to the streptomycin era, could find only 50 cases of recovery. Professor E. Bernard and Mrs. Lotte presented to the National Academy of Medicine, on July 3, 1951, the results of streptomycin therapy in 100 cases of tuberculous meningitis. Since 1947 and 1948 a total of 20 adult patients are still alive; 13 of them have been followed for three to four years and the rest for longer. Sixteen of these patients were cured without relapse and four after one relapse; in three cases treatment was too short to effect a cure. The authors stressed that the 20 living patients are all in satisfactory condition and, on the whole, have resumed a normal life. In 78 patients death was due to meningitis; 2 patients died from other causes after the end of treatment. The authors believe that, with sufficient treatment, there is good hope for lasting recovery in meningitic patients who show humoral and clinical signs of recovery at the conclusion of treatment. At the same meeting, Professor Debré reported that in a series of 93 children with tuberculous meningitis treated by him and his associates, 27 are still alive after a period of three years and nine months to four years and six months. Ten of these became dumb. In a second more recent series of 96 children, 65 are still alive. In this group eight became dumb and four have hemiparesis.

147
51

Therapeutic Applications of Oenanthol.—In 1940, Hoffmann, Schweitzer, and Dalby showed the mycostatic potency of oenanthol, one of the chemical principles of castor oil distillate. In 1939, Strong demonstrated its anticancer property in animals, but the clinical trials in man produced no appreciable results. He attributed the failure of this trial to the instability of such products in the human organism. In the Sceaux Laboratory of experimental oleotherapy, J. Solomides succeeded in producing a stable aqueous solution of oenanthol that had surprising bactericidal potency. In vitro, this activity proved to be 6 to 10 times greater against staphylococci and colibacilli than that of undecylenic acid, the other chemical substance of castor oil distillate. The therapeutic efficacy of oenanthol in an aqueous solution, administered in parenteral injections in doses of 0.06 to 0.12 gm. per day, in herpes zoster and flat warts (both affections caused by viruses) is great. Herpes zoster ophthalmicus is completely controlled within five days. An oenanthol liniment gave good results in more than 50 cases of eczema of various kinds, especially in dogs, after failure of all other treatment.

Trials in 60 cases of advanced and inoperable cancer gave good results in a dose of 0.002 gm. per kilogram of body weight per day. Pain subsided within a few days (with suppression of narcotics). An improvement of physical and functional signs, variable according to the site of the tumor, was noted. The inhibitive effect on the growth of tumor is considerable and may result in lasting improvement resembling, in certain cases, apparent cures. Other trials are in progress in Paris municipal hospitals.

ITALY

Convention of Legal Medicine.—The eleventh National Convention of Legal and Insurance Medicine was held in Taormina under the chairmanship of Professor Nicoletti, director of the Institute for Legal Medicine of the University of Catania. All the Italian schools of legal medicine and the important insurance companies were represented. The first report, by Professor Adamo of the University of Siena, concerned pathology related to low temperature in legal and insurance medicine. He discussed the biological mechanisms through which low temperatures impair cells, organs, and the entire organism, presenting evidence that these are not direct effects of the low temperatures but arise indirectly from circulatory disturbances.

Reactions to the freezing stimulus are variable, because defense reactions against temperature variations occur largely under the control of the autonomic nervous system, the tonus of which varies from person to person and from moment to moment. Some persons endure without impairment excessively low environmental temperatures for prolonged periods of time; in others temperatures that are not excessively low may rapidly prove harmful and may sometimes even be fatal. This great variety of effects caused by the same freezing action has assumed a place of importance in legal and insurance medicine.

Numerous lesions may originate not only from the cooling of the entire body but also from freezing of sensitive zones of the body. Internal organs may also be involved, as happens after inspiration of cold air or ingestion of cold drinks.

The variability and the severity of the pathogenic effects depend on such factors as associated infections, as well as on the complex interference of meteorologic elements such as humidity and ventilation, which can independently modify the cellular activities and the degree of heat dispersion. The problem of evaluating the serious effects of low temperature is a difficult one in legal and insurance medicine. Its solution has to depend in general on casuistics and on probability. One has to rely on up-to-date knowledge of the etiopathogenic problems related to the morbid process in the individual case and on careful examination of all the circumstances of time and events, which, combined with the low temperature, might have contributed to determine the morbid syndrome.

The second paper, on recent progress in forensic thanatology, was presented by Professor Frache, of the University of Rome. He specified that today thanatology must be considered the study of the physiological, physiochemical, and morphological changes that the human organism undergoes in the transition from life to death. From the biological point of view, Professor Frache subdivided the process of passing from life to death in the following successive phases: relative, intermediate, and absolute death. Relative death is a prolonged agony characterized by a temporary discontinuation of the higher coordinating functions, but during which there is a possibility of resuscitation with proper therapeutic maneuvers. Much progress has been realized during the last 50 years in the field of therapy aimed at combating death, for example, the method of intracardiac puncture, direct massage of the heart, the Russian method of intracarotid injection of blood in centripetal direction, and the method of intracarotid injection of blood directed to the cranium recently experimented on by Professor Dogliotti in the Surgical Clinic of Turin.

Professor Frache has made researches on electrocardiography of the dying heart, of which he presented iconographic proof, that, on the basis of the recent discoveries of the residue of life in the higher nervous centers and of the phenomena of survival of the heart, electrocardiographic examination is the only means for an early diagnosis of definite death. According to the speaker, such diagnosis is the indispensable basis of legislation for regulation of the removal of portions of the cadaver for investigational purposes. In intermediate death the biological activities of survival diminish progressively, without any possibility of resuscitating the entire organism even with exceptional therapeutic maneuvers. The study of thanatologic physiology and physiochemistry permits better insight into the phenomena of algor, rigor, and livor mortis, which are of particular medicolegal interest. Absolute death is characterized by the disappearance of every biological activity attributable to the living organism. The speaker concluded that the study of death must be carried out with the same criteria and the same seriousness that are applied to the observations of the living person, and thanatology must be considered an important biological science. Professor Squillaci of Catania discussed the principal medicolegal problems related to infanticide; Professors Racchioni and Favolesi of the University of Milan discussed the medicolegal problems of insurance against disease.

SWEDEN

Swedish Contributions to the Congress of Clinical Pathology.—The International Congress of Clinical Pathology, London, July 16-July 20, was attended by some 600 delegates from 37 countries. Sweden's representatives included Professor Löfström of Uppsala. He described the discovery of the first case of the cold-hemagglutinin-positive variety of nonbacterial pneumonia in Sweden in 1944. Since then many sporadic cases as well as epidemics of this disease have been observed in Sweden. Indeed, atypical pneumonia with significant titers of cold agglutinins would seem to be fairly common in Sweden, where it is liable to be confused with pulmonary tuberculosis in children. Other forms of nonbacterial pneumonia due to psittacosis or ornithosis do not appear to be endemic in Sweden, where no virus causative of atypical pneumonia has yet been recovered. Dr. A. Nordén of Lund gave an account of recent serologic studies of sporotrichosis in the course of which he used Sporotrichum schencki in the yeast phase as antigen. Autoclaved or ground-up cultures of the fungus were used as antigen for the complement-fixation test with Kent's technique. Tests with the serums of 11 human cases suggested that complement-fixing antibodies and precipitins appeared in deep-seated disease. The agglutination test had proved of little diagnostic value in human cases.

Dr. A. Wilton of Stockholm gave an account of the tissue biology of pernicious anemia from the standpoint of mitotic activity and degree of differentiation in megaloblastic marrow and in the hemopoietic tissues of the chick and hen. Dr. B. Vahlquist of Uppsala gave a paper on aplastic anemia in which erythropoiesis was predominantly affected. It appears as a rule early in life and is easily controlled by transfusion. Dr. Greta Hammarsten of Stockholm gave a description of macrocytic anemias experimentally induced in rats, mice, and guinea pigs by the ligature of the common bile duct and splenectomy. This condition could not be prevented by the injection of ox spleen extract after the operation. A communication on the electrophoretic separation of the fractions in serum by a filter paper technique

V 14
1951

was made by Drs. E. Körw, G. Wallenius, and A. Grönwall of Uppsala. The application of this procedure to cerebrospinal fluid was described by Dr. Wallenius, while Dr. Grönwall described the properties of various dextran solutions as a function of their molecular weight distribution. He showed how to predict the way in which the kidney deals with such solutions if the molecular sizes are known. Dr. Gunnar Brante discussed the collagen changes in gargoylism.

Treatment of Asthma with ACTH and Cortisone.—Dr. Ernest B. Salén published in the journal of the Swedish Medical Association, *Svenska Läkartidningen,* Aug. 10, 1951, a most encouraging account of the effect of corticotropin (ACTH) and cortisone, given by mouth, on several cases of bronchial asthma. It would now seem that small doses of cortisone given by mouth can keep the patient symptom-free for a long time. Reference is made in this connection to a recent communication by E. J. Schwartz in the *Journal of Allergy* in 1951, in which three cases of bronchial asthma treated with cortisone given by mouth are recorded. Salén's first patient was a woman born in 1893. She belonged to the aspirin-sensitive asthma group, and she had proved refractory to treatment on antiallergic lines. After only a day or two of treatment with corticotropin she was rendered completely symptom free, and her recovery was maintained even after the daily dose of corticotropin had been reduced in successive stages to 5 mg. It was now replaced by two tablets of 25 mg. of cortisone daily. The remission being maintained, the dosage was reduced to one 25 mg. tablet daily; later the dosage was reduced to one tablet every other day without a relapse. This treatment was begun on May 31, and the patient was still symptom free when last examined on July 28.

In five other cases of asthma, Salén has given corticotropin followed by cortisone by mouth. In all these cases, epinephrine could be dispensed with and various other remedies reduced to a minimum without any exacerbation of the asthma. Four of these patients have hithereto remained symptom free on a daily dose of 25 mg. Marked improvement, but not complete freedom from symptoms, was achieved in the fifth case. As was expected with such small doses of cortisone by mouth, there were no ill-effects or complications from this treatment. Nor was there any sign of fluid retention or disturbance of carbohydrate metabolism. Salén has revised his earlier opinion that successes achieved by corticotropin medication are bound to be brief, for he has found that asthma hitherto regarded as intractable may show a complete remission of some five months' duration. He suggests that, in future reporting of cases of asthma treated with corticotropin and cortisone, it would be well to supply data concerning the sedimentation rate and the part played by infections hitherto rendering such cases intractable.

Value of Educational Cancer Campaigns.—During the spring of 1950, an intensive educational cancer campaign was conducted in Sweden with a view to earlier diagnoses of malignant disease. The campaign was started by a life insurance company whose advertisements and posters were followed up by lectures on the wireless by leading members of the medical profession. Many articles on the subject were published in the press. Attendances at the large cancer hospital Radiumhemmet rose considerably during the same period. Prof. Elis Berven, in charge of Radiumhemmet at this time, encouraged one of his staff, Dr. Olov Dahl, to undertake a statistical study of this phenomenon so that the value of such an educational campaign could be gaged in terms of figures. Dahl's first step was to analyze the attendances at the hospital in earlier years so that the figures available for 1946 onward might be compared with those for 1950, beginning from approximately the same date late in January to about the end of May. It was found that the figures for 1949 were approximately the same as those for the three preceding years. It was therefore possible to take the figures for 1949 as "normal." In the early part of this year the attendances numbered 2,592, whereas in approximately the same period in 1950 they numbered 3,362. Evidently, therefore, the educational campaign had greatly increased the number of persons seeking medical advice for fear of cancer.

The patients coming to this hospital were classified according to whether they had (1) malignant tumors, (2) benign tumors, or (3) nothing serious. Between 1949 and 1950 there was a rise in the number of attendances in all three groups; when this rise was apportioned percentagewise, it constituted only 8% in the first group, whereas it was 82% in the second group and 10% in the third group. These third-group cases may be put on the debit side of the campaign, as they largely represent an unwarrantable claim on the time of the hospital staff. The many benign cases in the second group included several requiring no medical treatment, but the reassurances that could be given may well have come as blessings. It also transpired that the effect of the campaign had passed off about two months after it had ended. Details of this investigation are to be found in *Svenska Läkartidningen,* Aug. 17, 1951.

A Homeopathic Swindle.—The police in Stockholm have lately turned their attention to two men who for several years have made a fortune out of selling so-called homeopathic pills to drug stores and doctors practicing as homeopaths. These pills, containing only sugar, were labeled so as to meet the different needs of the various ailments supposed to require homeopathic treatment. This swindle, though conducted on a large financial scale, would probably have attracted only passing interest had it not been associated with homeopathy and the principles underlying this system of treatment. The Swedish Ministry of Health has been challenged with regard to its attitude toward homeopathy in general and its exploitation on commercial lines in particular. According to Swedish law, the manufacturer whose charges are out of all proportion to the costs of his raw materials is already liable to prosecution. But the present swindle may lead to the drafting of new legislation calculated to prevent just such transactions as those that have yielded large profits under the mask of homeopathy. It is pointed out in the press that the Ministry of Health is under an obligation to educate and protect the public with regard to teachings flagrantly in conflict with modern science. But the influence of the adherents of homeopathy is still so great that the prospects of combating it successfully are not too bright.

NORWAY

Self-Help by the Tuberculous.—In addition to the old and well-established National Association Against Tuberculosis and for Health, another organization has in recent years become very influential. Its name is Tuberkuløses Hjelpeorganisasjon (THO). Its propaganda week last September gave THO a good opportunity to bring its aims and achievements to the notice of the public. It is a nationwide federation of tuberculous and previously tuberculous persons. Others also may belong to it, but on a different basis. For, while tuberculous and previously tuberculous persons can become A members, others joining this body rank as B members, with very limited voting rights. THO is an independent, nonpolitical body with an ambitious program, and it already has a fine record of achievement.

One of the most concrete achievements of THO is a school near Bergen for the training of tuberculous persons unfit for their previous employment. At this school, some 200 persons have, since 1946, been given special training in various skilled occupations, such as wireless and electrical technique, carpentering, and mechanics. THO works for the employment of the ex-tuberculous on an equal footing with other workers. On its initiative the local authorities of 227 administrative districts have adopted certain measures for economic aid to the tuberculous since 1947. In addition to publishing pamphlets and organizing lectures and motion picture shows, THO publishes a monthly journal with a special Christmas number. This journal prints much of general interest as well as reading matter of special interest to the tuberculous. A recent number contains a short editorial that shows that THO is not afraid to chide those physicians who have not seemed to give the very best care to their patients. In the same number there is an informative article on work for the tuberculous by Dr. Otto Galtung Hansen, who directs the State Tuberculosis Service. Here he points out that the community needs the work the tuberculous and ex-tuberculous can do under supervision and hygienic conditions, an arrangement preferable to pensioning of such persons when they are found unfit for their previous employment. Hence, his advocacy of such training schools as the one organized by THO.

MISCELLANY

CONTROL OF NARCOTIC ADDICTION

George E. Connery, Washington, D. C.

The narcotic addiction problem can be summed up somewhat as follows:

1. Addiction currently is at a high—not a record—point in this country. Enforcement officials have been predicting this situation for the last 10 years.

2. There is a sharp difference of opinion on education and propaganda campaigns; top enforcement officials, while favoring careful education of parents, are opposed to campaigns carried on in the schools, which they are convinced usually produce more young addicts.

3. Addiction could be reduced by varying degrees through (*a*) international limitation of opium production, (*b*) state and local action, and (*c*) education of parents. (One long step in the right direction was taken by the last session of Congress, which enacted the Boggs bill, requiring stiff penalties.)

4. Responsibility has been shirked all the way from the family living room to the United Nations Assembly.

During the last six months the situation has been constantly in the spotlight. Newspapers, magazines, radio, and television did not take up the problem spontaneously. Their interest was aroused by a series of official hearings and investigations, which presented news on addiction in an easy-to-process manner, at the same time protecting the media against libel or slander suits.

Most spectacular of these hearings were conducted by the Senate's Special Committee to Investigate Organized Crime in Interstate Commerce (under the chairmanship of Senator Estes Kefauver, later Senator Herbert O'Conor), which followed the trail of racketeers as they dipped into illicit narcotics profits.

Probably more productive of scientific, sociological, and medical facts were the hearings of the subcommittee of the House Ways and Means Committee, which recommended new enforcement legislation. Also contributing to the publicity were special investigations, notably those in New York and Chicago.

The federal hearings were long, and so are the official printed reports and transcripts. In these pages, in addition to the sensational stories already exploited, are all the pertinent facts on addiction: long-range trends, possibilities of control, areas of apathy and failure, progress and lack of progress.

A stream of witnesses appeared with facts and opinions from the United States Public Health Service, Bureau of Narcotics, Customs Service, and Food and Drug Administration. Also, scores of informed (and uninformed) private citizens and federal and state officials contributed their views.

This article is intended as a factual report, presenting both the short-range and long-range problem, and listing the numerous recommendations for improvement. It is concerned with narcotic addiction, and the statistics cited apply to narcotic addicts only; marihuana and barbiturate users (non-narcotics) will be treated only incidentally. Most of the information comes from the official reports of the Kefauver-O'Conor Committee and the House Subcommittee. However, important facts also were supplied by other federal documents and federal officials, including Harry J. Anslinger, commissioner of the Treasury Department's Bureau of Narcotics.

There can be no argument about one thing: addiction—particularly among persons under 30 years of age—has increased greatly over the last four years. However, enforcement officials point out that this upsurge was anticipated, that almost every country on which valid information is available is experiencing a similar trend. Furthermore, despite the current rise, our domestic addiction rate now is 50% lower than it was a generation ago.

The increases over the last few years in this country did not follow a uniform geographic pattern. Sharp increases in a few cities (and there only among certain groups and in certain neighborhoods) have greatly increased the national average. The worst cities in this respect are listed by the Narcotics Bureau as New York, Philadelphia, Baltimore, Washington, D. C., Detroit, Chicago, and New Orleans. Mr. Anslinger said flatly that the current juvenile problem is limited to these cities and that in only one—New York—are high school addicts a real concern. Many city officials think the youth problem is more widespread.

SIGNIFICANT DATA ON NATIONAL ADDICTION

In World War I, the Army rejected one man in 1,500 as an addict; in World War II, one in 10,000. Narcotics Bureau studies have established the current rate for the entire adult population at about one in 3,000. This ratio—one in 3,000—gives a total of 50,000 adult addicts, to whom enforcement officials believe should be added another 10,000 adolescents, for a national total of 60,000. They spend in the neighborhood of a quarter of a billion dollars a year for illicit narcotics.

Federal officials take a "hands off" attitude toward statistics from New York City and do not include them in their calculations. They are particularly skeptical of a recent independent survey made in New York. Based on the estimated number of peddlers, and the estimated number of addicts required to support each peddler, this survey concluded that there were about 90,000 addicts in New York City alone.

Low points in juvenile addiction, as well as addiction as a whole, occurred in 1946, 1947, and 1948, with hospital commitments at an all-time low in 1947. But between 1946 and 1950, federal arrests showed a 100% increase, a numerical jump from 2,944 to 6,163.

In the first six months of 1946, the average age of voluntary and committed patients at the Public Health Service addiction hospital at Lexington, Ky., was 37½ years. Four years later, young narcotic addicts were coming in by the hundreds and the average admission age had dropped to 26.7. Percentagewise, in 1946 only three of every 100 narcotic addicts treated by the Public Health Service at Lexington or elsewhere were under 21 years; now 18 out of every 100 are under 21. However, the age group supplying the largest percentage of cases (50%) is the 21 to 30 group.

Bad as the juvenile ratio is, Narcotics Bureau officials point out that it is not an all-time record. More than 30 years ago a spot check of cases in New York City showed 26% to be under 21 and 9% between 15 and 17 years. An indication of the social and economic implication of juvenile addiction is the fact that about 75% are of colored groups, whereas they make up only 45% of total addicts.

The Narcotics Bureau has informed Congressional committees that these age trends, unfortunate as they are, are not surprising. As long ago as 1940 and 1941, the Bureau was asking—and failing to get—additional funds to prepare to contend with addiction increases, particularly among youngsters, which Bureau officials were confident would occur with a resumption of smuggling after the war.

Again in 1947, when there was some talk of closing the Lexington hospital as surplus, Mr. Anslinger advised against it. He told the Public Health Service that an increase in addiction, in his opinion, would occur in a very few years. Now the hospital is running at capacity.

It is possible that the peak of the current wave has passed. In midsummer something occurred that might mean good news—or just a statistical quirk. As measured by hospital cases, a

From the Washington Office of the American Medical Association.

V 14
1951

slight decrease in addiction was noted, but Public Health Service officials are not yet prepared to report a definite downward trend. Last year's admissions totaled 4,564, while this year's total, based on a projection of actual cases received in the early months, is estimated at 4,200. In a recent month, there was not a single application for hospitalization for addiction from one of the eight worst problem cities. As another suggestion of a change, it is reported that prices of heroin, along with the degree of adulteration, are increasing, a sign that something is wrong with the supply lines.

One estimate is that addicts in the United States obtain as much as half their supply through forged prescriptions and thefts from hospitals, pharmacies, and physicians; an average of 130 drug stores are robbed of narcotics every month. Almost all of this loot is morphine, although when they can get it addicts prefer the smuggled heroin, because of its stronger and faster "wallop." Handling forgeries and robberies, enforcement officials believe, would not be too difficult, if they were not forced to concentrate so much manpower on the source of the rest of the supply: smuggled narcotics, managed and marketed domestically largely by powerful racketeering rings.

Factory control—checking the supplies of pharmaceutical houses which legally process drugs for legitimate medical and scientific use—is said to be no problem at all in this country. Nor do physicians and pharmacists knowingly add much to the illicit supply. Testifying before the House Committee, George W. Cunningham, deputy commissioner of the Narcotics Bureau, was asked, "Do you have any difficulty with physicians?" "It is a rare instance," he replied. "We never prosecute a physician who is not a dope peddler. He has to be a dope peddler before we prosecute him. In other words, he has no more right to peddle dope than a blacksmith. . . . Sometimes we have cases, not often. . . . I will say that so far as the pharmacists are concerned, it is the rare instance that we ever have to prosecute a druggist anywhere."

147
51

INTERNATIONAL PRODUCTION

The great problem is the international oversupply, principally of opium, from which some of the other narcotics are derived. The world's total medical and scientific requirements in opium—to be used principally as morphine—average 450 tons annually. Production is in excess of 2,000 tons, which means that for every dram used legitimately, three other drams are available for illicit or at least nonmedical or nonscientific purposes. The world legal price of opium is about $10 per pound. Sold into the black market, opium brings twice that much to the farmer. By the time it reaches the addicts in this country, the price (as heroin, recovered from opium) is something like $48,000 per pound. These geometric profits are evidence enough that smugglers, racketeers, and peddlers will be involved in the traffic as long as there is an excess supply anywhere.

Nations with the greatest oversupplies of narcotics are Italy, Turkey, Greece, Iran, India, and China, with Mexico the largest supplier of smuggled marijuana. Marijuana is not classed as a narcotic, but it is vigorously suppressed because a high percentage of marijuana smokers eventually turn to heroin. Italy has about a 10-year supply of narcotics, yet continues to manufacture. Turkey has a control law, but that country remains the major source of heroin smuggled into the United States. Large-scale diversion of opium by Turkish farmers makes this traffic possible. Greece is rapidly becoming another important source of heroin, processed from opium obtained from Turkey via the Aegean Islands. Iran and India are responsible for the bulk of illicit opium in the United States.

China's production is far in excess of her needs. Illicit narcotics now are believed reaching Japan in a steady flow from Tientsin and Manchuria. Recent seizures in Japan include large shipments plainly labeled by the Duro-Well Pharmaceutical Laboratories in Tientsin. For the last several months Communist China has been attempting to unload 500 tons of opium on the world market in exchange for merchandise—enough to meet the world's legitimate requirements for one year. Thus far there have been no buyers.

Out of China, in regular smuggling channels, flow huge amounts of opium to Thailand and other oriental countries, where narcotics control laws, if any, are enforced poorly or not at all. From these more or less open markets, opium is smuggled to American and other world cities. Heroin, as noted, comes mainly from Italy and Turkey. By making proper contacts at both ends, seamen and other travelers can make fortunes in a few trips.

FEDERAL ENFORCEMENT

However loose the foreign and international controls might be, within the United States the federal law is simple and explicit; every grain of narcotics must be accounted for from the pharmaceutical house to the ultimate legitimate user. Possession of a narcotic drug not purchased through a regularly numbered prescription is in itself an offense. It is a crime for anyone to buy narcotics from a package that does not have a federal revenue stamp affixed. Possession of narcotics is prima facie evidence against the peddler or nonmedical user; it is up to him to prove to the jury that the drug came into his possession in a legal manner. Possession of heroin of any type is evidence of guilt, because heroin has not been manufactured legally in the United States for many years. It has been dropped from the United States Pharmacopeia. Marijuana has no legal status whatever. In brief, it is not a crime—technically—to be an addict; it is a crime to possess or purchase illegal narcotics.

Many judges, sociologists, and psychiatrists draw a black-and-white distinction between the unfortunate addict who pays between $5 and $50 per day for his dope and the peddler who makes the profit. Enforcement officers are not inclined to be so sympathetic. They claim that among the low-income addicts, who make up the mass of cases, the cost of narcotics rapidly drives a high percentage into the rank of peddlers. This is a fundamental difference of opinion that will not be easily compromised. For the present, federal enforcement aims at curing the addict by court-imposed hospital sentence and, through him, reaching the peddler and the higher racketeers.

Enforcement officials are satisfied that these laws are adequate to prosecute guilty parties, once they are apprehended. But the law-enforcement officers say they are handicapped in every other direction—inadequate budget, not enough personnel, ineffective sentences, apathy of states and municipalities (both from a police and from a medical-psychiatric standpoint), and the outright failure of too many parents.

Congressional hearings brought out the almost incredible fact that the Narcotics Bureau actually has a 20% smaller staff than it had a number of years ago. Its staff now numbers 188—no larger than a small city's police force. In 1930 it had more than 250 men. This organization, with help from the Customs Service, attempts to control smuggling and break up dope syndicates too powerful to be handled by individual states or cities. It has authority to do more, and does, but the multitudinous details of enforcement must be left to local authorities, who may prosecute on municipal or state laws or refer cases to federal officers. The Bureau's request for more money for the next fiscal year, incidentally, was reduced by the House Appropriations Committee at about the same time testimony was establishing that its workload was increasing.

The Bureau accounts for about 10% of federal convictions of all kinds, with only 2% of federal enforcement personnel. At one point in hearings before the House Subcommittee, Mr. Anslinger said he did not have enough money to protect important witnesses. He named three who had been murdered before cases came to trial. Yet, the Bureau in the last few years has been able to hit hard at the big operators; it has sent 200 of the country's major criminals to jail for narcotics violations alone.

In cooperation with the Bureau of Customs, the Narcotics Bureau maintains a list of suspects for circulation among police and federal officers at seaports. In this way, the thinly spread force of customs and narcotics officers is able to concentrate on likely smugglers, without wasting too much time on spot-checking of all travelers.

Enforcement officers complain bitterly about too-tolerant federal judges, whose short sentences allow hardened narcotic

criminals to grow rich and spread addiction while circling in and out of prison doors. Repeatedly they emphasized to the Congressional committees that stiff sentences always stamp out the traffic within the particular federal court district. At one time, it was pointed out, the federal judge in New Orleans generally gave year-and-a-day sentences. Federal judges in Memphis started giving 5 to 18 year sentences. Traffic ceased immediately in Memphis, but continued to flourish in New Orleans. For the same reason—long sentences—enforcement officers estimate there is not one addict per 25,000 population in Minnesota, a record at least eight times better than the national average—despite the fact Minnesota does not have a state narcotics enforcement agency. Brooklyn and Manhattan offer another example; many "dope pushers" live in Brooklyn, but they do not sell there, because long prison sentences are passed out by the federal judges in Brooklyn. Instead they do their selling in Manhattan, where, according to federal officers, sentences in that federal court do not discourage violators.

Mr. Cunningham, the deputy narcotics commissioner, laments: "These violators usually get a year and a day, and they say, 'I could do that standing on my head.' I have heard that so many times that I hear it in my sleep."

Considering all the Bureau's problems, comments of Congressmen indicate they are satisfied it is doing the best job it can. International control offers some hope, although both patience and politics are involved.

A development of a few years ago is evidence that addiction can be cut somewhat in proportion to a reduction in the world's supply. In 1947 controls broke down in Peru, and 17 clandestine factories began producing cocaine (from cocoa leaves). Seamen immediately started smuggling cocaine into the United States, where it had not been getting in for 15 years, and it was appearing on the illicit markets of every state within a few months. Prompt work by the federal government and Peru shut off the supply, and, the House Committee was told, ". . . there is almost no illicit cocaine in this country."

Officials are convinced that the same aggressiveness, if applied in other parts of the world, would help us strike at the root of our domestic problem. Efforts are being made to set up a United Nations system for control of opium poppy production. Turkey, Yugoslavia, India, and Iran already have agreed on a draft protocol to limit opium production, which has been approved by the United Nations Narcotics Commission. Overstocked Italy is considering stopping heroin production for 10 years, and the Greek government has agreed to fight smuggling. But there is no evidence that Communist China is interested in keeping her huge stocks of narcotics out of illicit channels.

However, Mr. Anslinger—the U. S. delegate to the United Nations Narcotics Commission—has not given up hope. He reported to the United Nations: "It is apparent the crest of teenage addiction has been reached and that these addicts will continue to decline if the governments . . . continue to tighten controls, if all governments provide heavier penalties and if Communist China closes her heroin factories."

Congress was not slow in reacting to this subject, which so thoroughly engaged the public's interest. At the session ending in October, it considered a score of bills and enacted one into law. This was H. R. 3490, introduced by Chairman Hale Boggs (D., La.) of the subcommittee that conducted the narcotics hearings. After hearings had produced substantial evidence that (*a*) stiffer sentences reduce both traffic and addiction and (*b*) narcotics sentences are getting progressively lighter, both House and Senate passed the Boggs bill, the latter without debate.

Until passage of the new law, the maximum fine was $5,000 and the maximum sentence 10 years, leaving the exact sentence up to the judge and making no distinction between first and subsequent offenses.

Under the new law, the maximum fine will be $2,000 in every case, but federal judges will be held to the following schedule of prison sentences: first offense, not less than two nor more than five years; second offense, not less than five nor more than 10 years; and third offense, not less than 10 years nor more than 20.

Enforcement officials are almost jubilant over the new law. They are certain that the long sentences—which cannot be avoided by repeaters—will frighten the case-hardened peddlers out of the traffic or "put them away in prison and off the streets." The law also classes marihuana as a narcotic, subject to the same enforcement as heroin and other narcotics.

When he signed the Boggs bill, President Truman also authorized a commission to make a continuing study of the narcotics problem, from the federal standpoint. The commission will study enforcement of the new law, prevention and control of addiction, and treatment and rehabilitation of addicts. The commission will be made up of representatives from the Treasury, State, Defense, Justice, and Agriculture departments and from the Federal Security Agency.

A number of bills would strengthen enforcement in other ways. Several provide the death penalty or life imprisonment for narcotics sales to minors. One (H. R. 4549), introduced by Representative Victor L. Anfuso, of New York, would set up a substantial new Customs Port Patrol, responsible for keeping 24-hour watch on foreign ships and at airports for evidence of narcotics or other smuggling.

Representative Edith Nourse Rogers, of Massachusetts, wants barbiturates brought under the same controls as narcotics. However, this is opposed by a number of organizations, including the Narcotics Bureau, Association of Retail Druggists, and American Medical Association. At the suggestion of the House Subcommittee, the Food and Drug Administration, the Justice Department and the Narcotics Bureau have drawn up another bill on the problem of barbiturates.

The statement by the American Medical Association noted that only four states lack specific jurisdiction over barbiturates, that, if this trend "to confer more and more authority on the federal government in matters more properly within the jurisdiction of the states" is continued, "we may eventually come to a situation where no drug that may be of harm to a patient if used unwisely may be prescribed by a physician without consent of the federal government."

Mr. Anslinger, speaking for the Narcotics Bureau, said enforcement of narcotics laws against barbiturates would be an impossible job administratively, because of the many manufacturers. He recommended instead that the Food and Drug Administration's authority over barbiturates be strengthened. "It would take five million dollars, not the one million this bill provides, and five times as many men as we have now." Congress decided to do nothing about barbiturates, at least at this time.

OTHER ASPECTS OF CONTROL

Obviously there is room for improvement in every direction. Addiction would decrease with a cut in the world's supply; the Narcotics Bureau could do a better job with more money; peddling would drop off with longer sentences; parents could, if they would, do more than anyone else to stop juvenile addiction. But Mr. Anslinger thinks something else should come first.

"The immediate need," he says, "is for passage by all localities of quarantine ordinances, to confine the users in controlled wards of city hospitals until they are pronounced cured by medical authorities. As long as they are on the streets, addicts will spread addiction and contamination to others like a person spreads smallpox." In his opinion, "being a fugitive from the health officer would take most of the glamor out of addiction."

However much Mr. Anslinger's suggestion might help, cities themselves have shown no interest in the idea. Nor are there any state hospitals to help addicts rehabilitate themselves, and very few narcotic or mental clinics are available to addicts who need treatment during the long pull back to a normal life. Mr. Anslinger describes psychiatry as an essential follow-up; he would have addicts report to specified psychiatrists as a condition of parole. Public Health Service officials agree that a follow-up plan would certainly salvage more than the 25% of addicts who now report themselves cured after the four-month Public Health Service hospital treatment.

Actually, 44 states do have uniform and adequate laws to control addiction, and laws of the other four could easily be made effective. However, federal officials say that the state laws do not help much because they are not enforced with vigor.

V 14
1951

except in the four states that also have special narcotics enforcement agencies—California, Pennsylvania, New York, and Florida.

Lack of state and local facilities, however, does not mean any addict need go without treatment. To date the United States Public Health Service has hospitalized every court-committed patient, and has admitted promptly every first-time voluntary male patient. There occasionally are delays in caring for repeaters and women patients.

One question is obvious: Why not warn everyone against narcotics in time—children and adults? The answer is not quite as obvious. Normal, well-adjusted persons—young or old—are not going to become addicts, authorities are agreed, except under very special circumstances. An unnecessary or undue stimulation of their curiosity might provide one special circumstance. This explains why the motion picture code forbids any reference to addiction. It also explains why Narcotics Bureau officers are trying to get out of circulation a few movie reels which, under the label of education, depict various methods of obtaining and injecting narcotics.

Most states require some attention be given to the narcotics problem in schools. According to the United States Office of Education, 30 states have laws providing for teaching the effects of alcohol and narcotics, at least in senior high schools. Such instruction usually is given as part of a general health course and is not overemphasized, an Office of Education official said.

Mr. Anslinger believes the danger of inciting an interest in "something new" is too great if an information campaign is carried on in the schools. He mentions that the New York police commissioner some time ago issued a booklet for the guidance of teachers, "How to Tell a Dope Addict." Results were unfortunate, and the booklet was withdrawn. However, New York school authorities later issued another booklet for teachers.

To date there is no specific United Nations policy on the subject. One resolution denouncing education and propaganda as "definitely dangerous" has been passed by the United Nations Narcotics Commission. Years ago, the League of Nations studied the problem and concluded, from replies of 68 nations, that "all educational methods or direct propaganda would be open to controversy and grave objection." The United States, incidentally, was one of the few nations that did not flatly oppose an education-propaganda campaign in its reply to the League. The issue grew out of a radio series broadcast in Poland which dealt only incidentally with narcotics but, according to Polish authorities, stimulated addiction.

American community leaders are pulling both ways on the question. The American Legion recently sponsored a three-day meeting in New York City, designed to study the advisability of an educational campaign. A number of national organizations were represented, and views were freely exchanged. So far the Legion has not indicated what course it will recommend

The Narcotics Bureau, reflecting Mr. Anslinger's strong views on the issue, prefers to work through parents, not through teachers. Its agents regularly address meetings of such groups as the Parent-Teacher Association, the Rotary, church associations, and physicians. They hammer home the idea that young addicts do not come out of good families. Mr. Anslinger puts the blame for juvenile addiction strictly on the parents. He says that the problem results from the "absence of a moral quality in too many American homes." He can hardly be challenged on that. But his statement leads him into a question for which he does not seem to have a satisfactory answer. He was asked: "How are you going to reach into the broken-down homes—which supply most of the young addicts—if you do not work through schools, community centers and so forth?" "I just cannot say," he admitted. "The best thing I know of is to get local quarantine laws. Then, if these youngsters start using narcotics—and remember most of them are not in school and cannot be reached through the school—they will be fugitives from the local public health officers. They will be like someone with smallpox, and there will not be so much glamor in addiction for them."

COMMENT

Nothing encountered in preparing this article was productive of any new advice for physicians. Addicts still use the age-old techniques to pry out prescriptions. Here are a few suggestions, a repetition, probably, of warnings given in every medical school:

1. Be careful of the transient patient with obscure symptoms, who may be an addict well-trained to confuse or mislead you.

2. Avoid giving a prescription for narcotics without first examining the patient and making an independent diagnosis; Narcotics Bureau files are thick with examples of addicts or peddlers who faked symptoms to get a prescription from a busy doctor.

3. Keep your prescription pads locked up or at least out of reach of transients.

4. If you know of an addict, or suspect a person of addiction, you will be doing that person and society a disfavor by keeping the information a secret; if you have a good local health department, communicate with it; otherwise the United States Public Health Service or the Bureau of Narcotics. It is virtually impossible to cure an addict unless he is placed in controlled surroundings.

UNDULANT FEVER

According to the Bureau of Animal Industry, United States Department of Agriculture, brucellosis is world-wide in distribution and a threat to public welfare. In man the disease is called human brucellosis, undulant fever, or Malta fever. Brucellosis still persists in about 20% of our herds and 5% of our cattle—although we have reduced it considerably by cooperative, organized methods since 1934. In cattle it is known as bovine brucellosis, Bang's disease, or contagious abortion. Many hogs and goats have the disease, and it is found to a much less degree in sheep, horses, and dogs. The three known types of the germ that causes it are Brucella abortus in cattle, Brucella suis in swine, and Brucella melitensis in goats.

Each type may infect certain other animals, and man is the victim of all three types. In humans, the goat and swine types are generally the severest, but the cattle type is the commonest. Since 1905, when the first authentic case of undulant fever was found in the United States, the number of reported cases has averaged about 7,000 annually. Rarely, if ever, does one person get the infection from another person. Therefore, eradication of the disease in animals will eliminate it entirely in man. Brucellosis in livestock can be eradicated by using proper methods long proved to be practical, but no cure has as yet been perfected. Progress in the treatment of the human type is being made with antibiotic drugs. In infected herds, brucellosis causes loss of calves by abortion, temporary and permanent sterility, lower sales value of infected animals, decreased milk and meat production, the breaking up of purebred lines, and greater costs for herd replacements.

The baffling behavior of the disease is an obstacle to effective control. An infected animal may appear to be healthy, yet it may be a carrier of the disease in virulent form. Symptoms and effects vary. Expelling a premature, dead fetus is the commonest symptom. The disease centers in the infected generative organs. Usually the disease causes no change in the tissues visible on post mortem examination, yet the organisms often get into the joints and cause arthritis.

Cows with brucellosis often fail to breed. Retained afterbirth occurs frequently. Many infected cows and sows do not abort, but they carry the disease to others that may do so. Abortion alone is no sure sign of the disease.

In man, Brucella organisms enter the body through the cut or bruised skin or through the digestive tract. Undulant fever victims suffer weakness, headache, painful joints, loss of weight and appetite, alternating chills and fever, profuse sweating, sleeplessness, and numbness of the extremities. The disease sometimes becomes chronic; it is seldom fatal, but it weakens resistance against other diseases.

Brucellosis causes an annual livestock loss of at least 100 million dollars. No estimate can be made of the loss caused by the disease in man.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Malpractice: Cloth Sack Left in Body Following Operation.—The plaintiff sued for damages alleged to have resulted from the negligence of the defendant physician in leaving a cloth sack in her body after an abdominal operation. From an order directing a verdict in the defendant's favor, the plaintiff appealed to the Supreme Court of Arizona.

In the latter part of 1946, the plaintiff was in ill health and consulted the defendant, a licensed, practicing physician and surgeon, who diagnosed her condition as being extra-uterine pregnancy and who advised her that an immediate abdominal operation was necessary. On that same day the plaintiff submitted to such operation which was performed by the defendant and an assistant. Immediately following this operation the plaintiff developed severe pains in her abdominal region near the place where defendant had made the incision, and for two years thereafter she suffered extreme and excruciating pain in that part of her body. In 1949 the plaintiff underwent a second abdominal operation performed by the same physicians and during the performance of this operation there was removed from the plaintiff's large bowel, where it joins the small intestine, a cloth sack approximately ten inches wide by sixteen or eighteen inches long. These two operations were the only ones ever performed on the plaintiff's body.

The plaintiff insisted that the trial court erred in granting defendant's motion for a directed verdict. She contended that where a patient submits herself to the care and custody of a surgeon for the purpose of having an abdominal operation performed while under anesthetic and unconscious, and where later, during a subsequent operation, a cloth sack of considerable size is found in the patient's body in the immediate area wherein such operation was performed and where the only operations ever performed on the patient were the first in which the surgeon's negligence is alleged and the second wherein the cloth sack is discovered, the patient is entitled to the aid of the doctrine of res ipsa loquitur in a malpractice action based on the alleged negligence of the surgeon who performed the first operation.

The Supreme Court said that the plaintiff's proposition was correct. The conditions necessary for the application of the principle of res ipsa loquitur are: (1) the accident must be of a kind which ordinarily does not occur in the absence of someone's negligence; (2) it must be caused by an agency or instrumentality within the exclusive control of defendant; (3) it must not have been due to any voluntary action or contribution on the part of the plaintiff. It is enough to say, said the Supreme Court, that the facts of this case are sufficient to invoke the doctrine. The sole remaining question, therefore, was whether under the evidence the plaintiff was entitled to have the question of negligence go to the jury. It is generally agreed, said the court, except in two or three jurisdictions, that the burden of proof is not upon the defendant, and that he is required to do no more than to introduce evidence which if believed, will permit the jury to say that it is as probable that he was not negligent as that he was. Against this evidence must be balanced the inference of negligence to be drawn from the circumstances of the case, which has weight so long as reasonable men will still draw it from the facts in evidence.

The defendant's rebutting evidence consisted of his own testimony on cross-examination under the statute, in which he said he made no incision into the plaintiff's intestinal tract in the first operation and that the cloth sack was found in the intestinal tract during the second operation. The defendant insisted that it would be an impossibility for the cloth sack to have traveled from the abdomen, where he alleged he made the incision in the first operation, into the bowel, where he claims it was found during the second. He admitted on oral argument that it was "quite inconceivable" that the cloth sack could have entered the plaintiff's intestines through her mouth, yet he claimed that, though "a very rare act," it could have been inserted into her rectum. Such an act, however, the plaintiff emphatically denied. In order to accept the defendant's contentions, said the Supreme Court, it would be necessary to believe that the sack could have crawled or traveled up through three or four feet of plaintiff's intestines, against the peristaltic motion thereof, and lodged itself in a ball or mass where it was allegedly found. This condition appears to us to border on the ridiculous. In the absence of expert testimony to support such a possibility we are inclined to believe that reasonable men would be justified in believing that the defendant's explanation suggested an improbability that borders on an impossibility. In any event, the court concluded, the defendant's explanation wholly failed to destroy the reasonable inference of negligence. The plaintiff was entitled to have the jury consider the credibility of the defendant's testimony and also the possibility of whether the plaintiff's injury could have been occasioned by some agency outside of the defendant's control.

Accordingly the order of the trial court sustaining the defendant's motion for a directed verdict was reversed and the cause was remanded for a new trial.—*Tiller v. Von Pohle, 230 P. (2d) 213 (Arizona, 1951).*

MEDICAL MOTION PICTURES

First Aid On the Spot: 16 mm., black and white, sound, showing time 11 minutes. Produced in 1951 by and procurable from Encyclopaedia Britannica Films, 1150 Wilmette Ave., Wilmette, Ill.

This is an introduction to the subject of first aid; it discusses and illustrates (1) treatment of shock, (2) care of wounds, (3) control of bleeding, (4) artificial respiration, (5) splinting of fractures, and (6) treatment of burns. The producers are to be commended for the simplicity with which the basic points of first aid are presented and for the avoidance of details. The illustrations of each point are well chosen and are presented simply and carefully. The method of diagramming the arterial flow of blood and the pressure points, by means of crayon lines drawn on a live model, enhances the illustration of the section on the control of bleeding.

The film is recommended for lay groups that are interested in first aid training but have little or no background in the subject. It will also be useful for motivating people to take American Red Cross first aid courses. The photography and narration are very good.

The Story of Lucy: 16 mm., color, sound, showing time 17 minutes. Produced in 1951 by and procurable on loan from Kessler Institute of Rehabilitation, Pleasant Valley Way, West Orange, N. J.

The film portrays the 10-month rehabilitation program of a 25-year-old paraplegic woman and her return to full employment. It presents her comeback from complete dependency, not as a miracle, but as an "all-hands" evolution, involving many individuals and groups. The rehabilitation team, consisting of physicians, nurses, therapists, vocational counselors, and brace maker, together with many individuals and agencies in the community make it possible for Lucy to secure training and to solve her problem realistically.

While this film primarily shows what a well-organized and well-equipped rehabilitation team and center can accomplish, it also demonstrates methods by which the physician can improvise for the home care of patients who are unable to go to a large center. The film could be shown advantageously to professional or lay groups. The photography and narration are satisfactory.

V 14
1951

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Am. Journal Diseases Child., Chicago

82:121-258 (Aug.) 1951

Eating, Sleeping, and Elimination Practices of Group of Two-and-One-Half-Year-Old Children: Introduction. K. E. Roberts and J. A. Schoellkopf.—p. 121.
Id.: II. Eating Practices. K. E. Roberts and J. A. Schoellkopf.—p. 127.
Id.: III. Sleeping Practices. K. E. Roberts and J. A. Schoellkopf.—p. 132.
Id.: IV. Elimination Practices: Bowel. K. E. Roberts and J. A. Schoellkopf.—p. 137.
Id.: V. Elimination Practices: Bladder. K. E. Roberts and J. A. Schoellkopf.—p. 144.
Idiopathic Familial Hyperlipemia. O. C. Bruton and A. J. Kanter.—p. 153.
*Epidemic Poliomyelitis: Review of 526 Cases. M. Lenarsky, R. L. Parr and H. E. Seanor.—p. 160.
Nasal, Nasopharyngeal, and Throat Suction Apparatus for Newborn and Small Infant. E. B. Emerson Jr.—p. 169.

Epidemic Poliomyelitis.—The histories of 526 cases of poliomyelitis observed and treated at the Willard Parker Hospital in New York during the last half of 1949 are reviewed. These cases are not a true cross section of the epidemic as it occurred in the city (2,446 cases reported) but rather a concentration of the more severely involved patients. Of the 40 deaths in this group, 39 were in patients with bulbar involvement. Complete vascular collapse resulting from failure of the vasomotor center accounted for 33 deaths. The availability of the respirator for respiratory difficulty due to peripheral or central failure and the use of central stimulation for the latter minimized fatality from these causes. Vomiting of coffee-ground material, considered an unfavorable prognostic sign, occurred in 16 patients with bulbar poliomyelitis, 11 of whom died. In one case autopsy disclosed a perforation of the fundus of the stomach. In connection with the gastrointestinal lesions demonstrated in fatal cases of poliomyelitis the authors mention the neurogenic theory of the causation of gastrointestinal ulceration. Muscle pain was not a predominating feature in this series, possibly because of the early institution of moist heat treatment. Administration of an antihistaminic drug to 10 patients seemed to have no therapeutic effect. Aureomycin was given to 38 patients without effect. A refrigerating unit was used to prevent extreme fever and also to decrease viral activity in the spinal cord by bringing the spinal fluid temperature below body temperature. The apparatus probably produced an antipyretic effect without altering the course of the disease. The use of drugs for vital center stimulation was effective in some instances of bulbar poliomyelitis. Six tracheotomies were performed, but all six patients died. Bulbar involvement was not considered a contraindication to the use of the respirator. Periodic removal from the respirator was started early. Transportation of the acutely ill poliomyelitis patient over long distances ("transportation fatigue") may contribute to the severity of involvement and to mortality.

A.M.A. Arch. Ophthalmology, Chicago

46:113-234 (Aug.) 1951

Clinical Measurements of Aqueous Outflow. W. M. Grant.—p. 113.
Evaluation of Surgery of Congenital Cataracts. F. C. Cordes.—p. 132.
Divergence Paralysis with Increased Intracranial Pressure: Further Observations. M. Chamlin and L. M. Davidoff.—p. 145.
Modifications of Zeiss-Nordenson Retinal Camera. M. Markham.—p. 148.
Pharmacology and Toxicology. I. H. Leopold.—p. 159.

The Association library lends periodicals to members of the Association and to individual subscribers in Continental United States and Canada for a period of five days. Three journals may be borrowed at a time. Periodicals are available from 1940 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

An asterisk (*) before a title indicates that the article is abstracted.

A.M.A. Arch. Otolaryngology, Chicago

54:115-230 (Aug.) 1951

Malformations of Auricle and External Auditory Meatus: Critical Review. F. Altmann.—p. 115.
"Postoperative" Hyperrhinolalia (Rhinolalia Aperta). E. Froeschels.—p. 140.
*Tracheotomy in Tetanus. E. Herzon, E. Killian and S. J. Pearlman.—p. 143.
Treatment of Hay Fever by Hyposensitization. S. Slepian.—p. 157.
Neurofibrosarcoma of Facial Nerve Involving Tympanomastoid. M. R. Guttman and M. U. Simon.—p. 162.
Use of Tantalum Foil Tube to Maintain Patency of Nasofrontal Duct. W. C. Hugenberg and H. L. Williams.—p. 167.
Functional Examination of Hearing. A. Lewy, S. L. Shapiro and N. Leshin.—p. 201.

Tracheotomy in Tetanus.—Statistics in recent literature indicate that mortality from tetanus varies between 35% and 63%. Respiratory decompensation is the chief factor in the fatal outcome. The use of depressants of the central nervous system may contribute to respiratory decompensation. The authors present histories of six patients with tetanus in whom tracheotomy became necessary for the patient's survival. One of these patients died. It is surmised that he suffered irreversible damage to the respiratory system owing to delay in performing a tracheotomy. Herzon reviews the history of the use of tracheotomy in tetanus and theories regarding the pathogenesis and pathology of this disease. He points out that with the onset of generalized or convulsive tetanus, which may follow the early or localized type, the difficulty in respiration becomes a major concern. The following factors are involved in the respiratory difficulties: peripheral neuromuscular dysfunction, central or brain-stem dysfunction, mechanical obstruction, chemical physiological alteration, and secondary pulmonary complications. Postural drainage, tracheotomy, and aspiration are valuable, but oversedation is dangerous. The indications for tracheotomy are (1) prolonged spasm of the muscles of respiration, (2) absence of cough reflex, (3) absence of swallowing reflex, (4) laryngeal obstruction, (5) secretion in the tracheobronchial tree, (6) tongue trauma, and (7) coma. Tracheotomy should be done before irreversible respiratory decompensation occurs owing to any or all of the above factors. The after care of the patient subjected to tracheotomy is important.

A.M.A. Arch. Pathology, Chicago

52:105-198 (Aug.) 1951

Vascular Lesions in Alloxan Diabetic Rats. A. L. Chute, J. L. Orr, M. J. O'Brien and E. E. Jones.—p. 105.
Lipemia of Rabbits Following Unilateral Occlusion of Renal Vessels. G. C. Johnson, F. C. Bauer Jr., E. F. Hirsch and L. Carbonaro.—p. 115.
Effect of Cortisone on Arthus Phenomenon as Related to Time of Sensitization Comparison of Histopathologic Changes. F. W. Tillotson.—p. 119.
Localization of Thrombosis in Main Arteries and Deep Veins of Lower Limb. Å. Lindbom.—p. 128.
Lesions of Vasa Vasorum and Dissecting Aneurysms of Aorta: Analysis of Incidence, Etiological Aspects, Pathogenesis, and Pathological Changes. J. F. McCloskey and P. T. Chu.—p. 132.
*Malignant Hypertension Following Administration of Cortisone in Periarteritis Nodosa. T. Ehrenreich and E. V. Olmstead.—p. 145.
Quantitative Exfoliative Cytology: Effect of Diethylstilbestrol on Glycogen Content of Epithelial Cells in Urinary Sediment and Cervical Smears in Pregnancy. A. G. Foraker and S. W. Denham.—p. 155.
Death from Rapid Anoxia. I. Gordon and R. Turner.—p. 160.
Embryogenesis of Tracheoesophageal Fistula and Esophageal Atresia: Hypothesis Based on Associated Vascular Anomalies. Z. Fluss and K. J. Poppen.—p. 168.

Hypertension Following Administration of Cortisone.—In a case of periarteritis nodosa, cortisone therapy was immediately followed by fatal malignant hypertension. At autopsy there was periarteritis nodosa of many organs, including the kidney. These lesions were in acute, healing, and healed phases. There were also membranous glomerulonephritis and lesions typical of malignant nephrosclerosis. The renal vascular lesions of malignant nephrosclerosis may be distinguished from vascular lesions

attributable to periarteritis nodosa. It is suggested that a cause and effect relation exists between the administration of cortisone and the occurrence of malignant nephrosclerosis in this case.

American Journal of Clinical Pathology, Baltimore

21:601-700 (July) 1951

*Isolation of Poliomyelitis Virus from Heart in Fatal Cases. C. W. Jungeblut and J. E. Edwards.—p. 601.
Factors Influencing Male Frog Test for Pregnancy. H. L. Reinhart, I. J. Caplan and G. Y. Shinowara.—p. 624.
Trypsin-Modified Erythrocytes: Their Use as Test Cells in Acquired Hemolytic Anemia. M. C. Rosenthal, W. Dameshek and R. Burkhardt.—p. 635.
Studies on Anticoagulant Action of Heparin: II. Prolongation of Heparin Activity in Vivo. N. Wald, N. Applezweig, I. B. Cohen and others.—p. 641.
Effect of Paraffin Oil and Mycobacteria on Antibody Formation and Sensitization: Review. J. Freund.—p. 645.

Poliomyelitis Virus in Heart and Spinal Cord.—Specimens of human spinal cord and heart from five patients who died of poliomyelitis were examined for the presence of virus. By means of transfer to cynomolgus monkeys, poliomyelitis virus could be isolated from both the cord and the heart in two persons. From a third patient virus was recovered only from the heart and from a fourth subject only from the cord. In the fifth patient no virus was recovered from either cord or heart. Two freshly isolated strains of virus, derived from human cord, were carried without difficulty through successive generations of monkeys. Passage of the corresponding viral strains, derived from human heart, succeeded with one strain only. Monkeys paralyzed by human virus showed not only the characteristic lesions in the anterior horn but also, in a majority of these animals, myocardial lesions, resembling those observed in the human disease. In view of the reported facts the possibility must be considered that poliomyelitic carditis in man is caused by direct action of the virus on the heart muscle.

American J. Digestive Diseases, Fort Wayne, Ind.

18:229-260 (Aug.) 1951

Phenomenon of Chylomicrons in Fat Absorption and Arteriosclerosis. H. Necheles.—p. 229.
Chronic Ulcerative Colitis—Clinical and Bacteriologic Response to Aureomycin. M. H. Streicher and R. Kniering.—p. 231.
Diabetic Coma: Problems of Fluid and Electrolyte Balance. M. G. Goldner.—p. 235.
Saint's Triad: Hiatus Hernia, Diverticulosis Coli and Gall Stones. E. D. Palmer.—p. 240.
Pharmacological Properties of New Antispasmodic N, N-Dimethylthymyloxyacetamidine Hydrochloride. B. N. Craver, W. Barrett, A. Cameron and others.—p. 241.
The Case for Routine Proctosigmoidoscopy (Report on 550 Examinations). A. X. Rossien, J. R. Reuling and A. N. Lakes.—p. 246.
Swallowed Intestinal Decompression Tubes. M. O. Cantor.—p. 250.
Gastric Surgery in the Aged. R. P. Reynolds and M. O. Cantor.—p. 254.

American Journal of Medical Sciences, Philadelphia

222:121-242 (Aug.) 1951

Increasing Promiscuity and Abuse with the Barbiturates. J. M. Maas.—p. 121.
Effects of Intravenous Protoveratrine on Hemodynamics and Exercise Tolerance in Patients with Hypertension. F. W. Lovejoy Jr., P. N. G. Yu, R. A. Bruce and others.—p. 129.
Treatment of Thyrotoxicosis with Methimazole (1-Methyl-2-Mercaptoimidazole). N. Taylor, M. Teitelbaum and A. Large.—p. 138.
Localized Myxedema in Relation to Thyrotoxicosis and Exophthalmos. S. E. Grynkewich, R. M. Laughlin, F. T. Herron and W. J. Carmel Jr.—p. 142.
Re-Feeding (Nutritional) Gynecomastia in Cirrhosis of Liver: I. Clinical Observations. R. M. Kark, G. R. Morey and C. R. Paynter.—p. 154.
Pulmonary Circulation Times with Particular Relationship to Acute Hypoxia. H. R. Bierman.—p. 162.
Typhoid Fever of Short Duration. F. K. Bauer and A. G. Bower.—p. 174.
NPH Insulin in Diabetic Patients with Complications. C. R. Shuman and R. B. Francis.—p. 179.
Serum Complement in Rheumatoid Arthritis. J. H. Vaughan, T. B. Bayles and C. B. Favour.—p. 186.
Use of Cation Exchange Resin in Management of Fluid Retentions of Normal and Toxemic Pregnancies: Preliminary Report. W. R. Penman.—p. 193.
Pulmonary Infarction: Frequently Missed Diagnosis. R. Miller and J. B. Berry—p. 197.
Evaluation of Simplified Thromboplastin Extract. F. J. Schilling, A. DeNatale and F. C. Mottram.—p. 207.
Inquiry into Surgical Treatment of Ulcerative Colitis. G. S. Bates.—p. 211.
Ocular Phakomatoses. T. J. Kirby.—p. 227.

American Journal of Medicine, New York

11:133-270 (Aug.) 1951

Problem of Estimating Rate of Secretion of Antidiuretic Hormone in Man. H. D. Lauson.—p. 135.
Studies of Serum and Urine Constituents in Patients with Cirrhosis of Liver During Water Tolerance Tests. E. P. Ralli, S. H. Leslie, G. H. Stueck Jr. and B. Laken.—p. 157.
*Role of Shock in Production of Central Liver Cell Necrosis. M. Ellenberg and K. E. Osserman.—p. 170.
*Antibiotic Therapy of Friedländer Pneumonia. W. M. M. Kirby and D. H. Coleman.—p. 179.
Clinical and Pharmacologic Studies with Allylmercaptomethyl Penicillin (Penicillin "O"). C. V. Adair, W. G. Woodin and P. A. Bunn.—p. 188.
Allergy to Penicillin O and Management of Penicillin Sensitivity. S. Siegel.—p. 196.
Infectious Mononucleosis: Study of 210 Sporadic Cases. J. E. Stevens, E. D. Bayrd and F. J. Heck.—p. 202.
Lipid Metabolism and Atherosclerosis. R. G. Gould.—p. 209.

Central Liver Cell Necrosis.—Well-defined cases of central liver cell necrosis present the following features: congestion, eosinophilic staining, nuclear changes, cellular infiltration, and architectural disruption, all centrilobular in location. In 200 routine unselected necropsy cases there were 34 instances of central liver cell necrosis as defined by these criteria. Of these, 32 (94%) were definitely related to shock. Study of the clinical history showed that the duration of shock is an important factor in the production of central liver cell necrosis. Shock lasting less than 24 hours rarely results in central liver cell necrosis, whereas shock lasting longer than 24 hours almost invariably does. The cause of the shock is immaterial to the production of central liver cell necrosis. Chronic congestive heart failure per se is not important in producing central liver necrosis, which is not a lesion specific for shock but is probably the end result of any prolonged vasospasm, anoxia, and acute circulatory insufficiency. The pathological changes in central liver cell necrosis apparently begin with pericentral congestion and sinusoidal dilatation and are then followed by staining alterations and cellular changes.

Antibiotic Therapy of Friedländer's Pneumonia.—From July, 1949, to July, 1950, 11 patients, 9 men and 2 women between the ages of 36 and 74, with Friedländer's pneumonia, were given intensive chemotherapy with sulfonamides, streptomycin, aureomycin, penicillin, and chloramphenicol (chloromycetin®). Eight of the patients were chronic alcoholics. In one patient symptoms of pneumonia appeared immediately after a nine-day course of penicillin treatment for syphilis. Six of the 11 patients died. Four had overwhelming infections and died within 16 hours, despite intensive chemotherapy. In one patient death was due to lower nephron nephrosis. The sixth patient had a mixed infection, and death was associated with the development of Friedländer's bacillus empyema. Four of the patients who died had positive blood cultures, while only one of the patients who survived was bacteremic. Of the five patients who survived two responded well to chloramphenicol; one, who was very ill, was given 6 gm. daily for seven days and then received 1 gm. daily for another four days, while the other, who was less severely ill, received only 1 gm. daily for seven days. In one patient, whose pneumonia was complicated by a bronchopleural fistula and empyema, there was some subjective improvement on aureomycin therapy (3 gm. daily by mouth for 14 days) plus repeated aspirations. Following open drainage the infection responded promptly to streptomycin and sulfadiazine. In three patients there was residual scarring and fibrosis following recovery from the acute illness. On the basis of in vitro tests and the clinical response observed in the authors' patients it would appear that aureomycin and chloramphenicol are probably as effective as streptomycin in the therapy of Friedländer's pneumonia. The generally poor physical condition of persons who contract Friedländer's pneumonia and the frequent delay in starting therapy make it likely that mortality from this disease will remain high, despite the remarkably good response to chemotherapy in those patients who were in relatively good physical condition and in whom treatment was started early.

V 14
1951

American Journal of Surgery, New York

82:183-302 (Aug.) 1951

Carcinoma of Breast: Five- to Twenty-Five Year Follow-Up Following Radical Mastectomy. E. E. Cliffton and L. E. Young.—p. 185.
Surgical Error of Gastroileostomy: Report of Six Cases. A. G. Michels, C. H. Brown and G. Criie Jr.—p. 191.
Cystitis Glandularis and Follicularis. H. L. Kretschmer.—p. 198.
*Nodular Goiter and Carcinoma of Thyroid. E. R. Fisher and B. Fisher. —p. 202.
Discharge from Nipple. J. G. Garland.—p. 209.
Deep Neck Infections. L. F. Knoepp.—p. 213.
Small Caliber Missile Blast Wounds of Hand: Mechanism and Early Management. R. W. Adams.—p. 219.
Vaginal Hemorrhage Due to Potassium Permanganate. S. Lubin and R. Waltman.—p. 227.
*Gelfoam® and Thrombin in Treatment of Massive Upper Gastrointestinal Hemorrhage. M. O. Cantor, C. S. Kennedy and R. P. Reynolds. —p. 230.
Congenital Ichthyosis. H. P. Lattuada and M. S. Parker.—p. 236.
Diagnostic Test for Tumors of Uterine Canal. W. B. Norment.—p. 240.
Primary Adenocarcinoma of Gallbladder with Intramural Calcification. R. H. Kazmierski.—p. 248.
Evaluation of Rucker Method of Episiotomy Repair as to Perineal Pain. T. E. Mandy, S. M. Christhilf Jr., A. J. Mandy and I. A. Siegel. —p. 251.
Recovery from Prolonged Cardiac Arrest. H. S. Ivory and H. Rinzler. —p. 256.
Management of Intractable Pain in Peripheral Vascular Diseases. J. H. Siris and J. W. Kahn.—p. 260.

Nodular Goiter and Carcinoma.—Analysis of 38 primary carcinomas of the thyroid, which were observed at the Mercy Hospital in Pittsburgh over the 16-year period 1933-1949, revealed the incidence of carcinoma in 2,071 thyroidectomies to be 1.6%. The incidence of carcinoma in the nodular goiter of all types is 3.3% and in the nontoxic nodular group 3.7%. The survival periods are found to be related more consistently with the histological type of the tumor and its degree of differentiation than with microscopic evidence of blood vessel or lymphatic invasion. Follow-up study on 31 of the 38 cases revealed that in 50% of the cases that were not diagnosed clinically there was survival for nine years or more in spite of lymphatic and blood vessel invasion in many. There was clinical recognition or suspicion of thyroid carcinoma in only 39.3%. Difficulties in recognition of malignant nodules make it evident that nodular goiter is primarily a surgical problem. There was evidence of pseudoadenoma formation in 47.3% of the tumors. There was no histological evidence of transformation of benign to malignant adenoma. The authors feel that variations in the nomenclature of thyroid nodules explain many discrepancies in reports.

Gelfoam® and Thrombin in Gastrointestinal Hemorrhage.—The effectiveness of absorbable gelatin (gelfoam®) sponge and thrombin as a hemostatic agent has been attested by numerous surgeons in various fields. Experimental studies by Light and Prentice, and by MacDonald and Matthews demonstrated that absorbable gelatin sponge and human fibrin foam reacted similarly in the clotting process and in the tissues. This suggested the use of absorbable gelatin sponge as a powder that could be carried by a liquid medium much like the fibrin in the blood, so that it could be used in the control of bleeding in those areas of the body in which direct pressure of a sponge is not feasible, such as in the gastrointestinal tract. Studies on dogs in which bleeding lesions had been produced in the stomach had revealed that for effective hemostasis the absorbable gelatin sponge in powder form and thrombin must come into direct contact with the site of the bleeding. In a preliminary study of 28 cases Cantor, Kennedy, and Reynolds demonstrated the value of this gelatin powder and thrombin in the control of massive gastroduodenal hemorrhage. In this report they review observations on 120 cases of massive hemorrhage in the upper gastrointestinal tract, in which the gelatin powder and thrombin were used. No patient was included in this series unless the red blood cell count on admission was 3,000,000 or less. In over 40% of the patients it was less than 2,000,000. The authors concluded that the absorbable gelatin powder and thrombin are useful additions to the armamentarium in the treatment of massive upper gastrointestinal hemorrhage. All such patients must have adequate blood replacement. If stabilization of circulation does not occur within 24 to 48 hours, surgery should be considered. The bleeding of high-lying gastric ulcers on the lesser curvature is not easily controlled by any hemostatic agent. The treatment as presented in this article is only designed to control the hemorrhage. After recovery, elective gastrectomy is performed on properly selected patients who have had one or more massive gastroduodenal hemorrhages.

Am. Practitioner & Digest of Treatment, Philadelphia

2:657-744 (Aug.) 1951

Neuropsychiatric Manifestations of Porphyria: Review of Literature. I. M. Becker.—p. 657.
Diagnosis and Control of Therapy in Rheumatoid Arthritis. B. B. Wells, R. D. Lowrey and S. W. Ross.—p. 662.
Vascular Complications of Diabetes. J. H. Peters.—p. 669.
Diagnosis of Colonic Lesions. M. L. Tracey.—p. 673.
Therapeutic Principle in Management of Psychosomatic Disorders. A. Gordon.—p. 680.
Pulmonary Emphysema: Clinical Forms. S. Jacobs.—p. 681.
Varicose Ulcer: Pathogenesis and Diagnosis. A. Fields.—p. 686.
*Laboratory and Clinical Studies on Terramycin. E. M. Yow, D. E. Jenkins, H. E. Mendell and others.—p. 689.
Old Bell's Palsy: Improvement After Electrical Stimulation. Report of Three Cases. J. L. Rudd.—p. 694.
Treatment of Congestive Failure in Children. S. J. Robinson.—p. 696.
Mode of Action of Benzyl Cinnamate Solution in Chronic Inflammatory Lesions of Pelvis. J. Jacobson.—p. 699.
Penicillin Ointment as Topical Agent in Treatment of Infections of Foot and Toes, with Osteomyelitis, in Diabetic Patients: Two Cases, One with Three Separate Lesions. A. Jablonsky.—p. 701.

Terramycin: Laboratory and Clinical Studies.—This report deals with 60 patients with various infections treated with terramycin. Terramycin was found to be beneficial in both lobar and mixed bacterial forms of pneumonia, acute pharyngitis, urinary tract infections due to susceptible organisms, intestinal amebiasis, granuloma inguinale, lymphogranuloma venereum, and in one case each of brucellosis, shigella, dysentery, and tularemia. It was of no value in infections due to Proteus vulgaris and Pseudomonas aeruginosa, Hodgkin's disease, sarcoidosis, and tuberculous meningitis. No serious untoward reactions were noted, but patients occasionally complained of nausea, vomiting, or diarrhea, which could usually be controlled by administration of the drug with or after meals. The usual adult dose was 3 gm daily by mouth in divided doses. In children the dose used was 100 mg. per kilogram of body weight per 24 hours.

Angiology, Baltimore

2:143-226 (June) 1951

Phenomenon of Hyperreactivity: Definition and Illustrations. R. H. Smithwick and C. W. Robertson.—p. 143.
*Effect of Extensive Sympathectomy upon Blood Pressure Responses and Levels. G. P. Whitelaw and R. H. Smithwick.—p. 157.
Rapid Serial Contrast Angiography. C. T. Dotter and I. Steinberg. —p. 173.
Operative Anatomy of Lumbar Sympathetic Chain. E. A. Edwards. —p. 184.
Priscoline: Skin Temperature and Electrocardiographic Studies. J. Flasher, R. H. Van Scoyac, D. V. Mahoney and G. C. Griffith.—p. 199.
Superior Vena Caval Obstruction with Survival After 36 Years. A. S. Glushien and M. M. Mansuy.—p. 210.
Effect of Drugs Used in Treatment of Intermittent Claudication on Exercise Tolerance of Individuals with Obliterating Arteriosclerosis. M. Kissin, J. J. Stein and R. J. Adelman.—p. 217.

Effect of Sympathectomy on Blood Pressure.—Hypertension may result from neurogenic, humoral, or mechanical factors, or a combination of two or three of these. That the nervous factor plays an important role has been demonstrated in the results obtained by sympathectomy and splanchnicectomy. This paper concerns the change in level of diastolic blood pressure following extensive sympathectomy, which are divided into three categories: (1) greatly lowered, 20 points or more; (2) slightly lowered, 10 to 19 points; and (3) same or worse. In a significant number of instances, in the "slightly lowered" and "same or worse" groups, the systolic levels were markedly lowered. A comparison was made of diastolic blood pressure response in 500 surgical and in 91 nonsurgical cases followed one to three years. It was found that when the neurogenic factor is dominant, extensive sympathectomy is effective in lowering blood pressure. If sustained hypertension is long-standing or in the most advanced stages, effectiveness of sympathectomy in reversing the hypertensive process will be in inverse ratio to the extent that the humoral and/or mechanical factors are present. The natural course of hypertensive cardiovascular disease is one of progres-

sion from the normotensive hyperreactor to intermittent hypertension to sustained hypertension. The progress of the disease may be halted, and, in fact, reversed, if, early after the development of sustained hypertension, the neurogenic factor is interrupted by extensive sympathectomy. Operation is not indicated for intermittent hypertension unless there is evidence of cardiovascular involvement. In comparing medical and surgical series, it is of utmost importance to group cases according to the severity of cardiovascular involvement. It is apparent that life expectancy can be significantly prolonged following splanchnicectomy in cases with slight to moderately advanced changes, even if the blood pressure levels are not significantly lowered after splanchnicectomy.

Annals Otol., Rhin. and Laryngology, St. Louis

60:273-588 (June) 1951. **Partial Index**

Experimental Study of Auditory Damage Following Blows to Head. H. F. Schuknecht, W. D. Neff and H. B. Perlman.—p. 273.
Adenoma of Bronchus. E. Huizinga and J. Iwema.—p. 290.
Surgical Treatment of Ménière's Disease: Experimental and Clinical Investigations. F. Altmann and F. Montreuil.—p. 308.
*Effect of Dihydrostreptomycin Hydrochloride and Sulfate on Auditory Mechanism. A. Glorig.—p. 327.
Some Aspects of Allergic Maxillary Sinusitis with Special Consideration of Latent Allergy. O. Strömme.—p. 336.
Histological Investigations in Chronic Streptomycin Poisoning in Guinea Pigs. E. Christensen, H. Hertz, N. Riskaer and G. Vra-Jensen.—p. 343.
Carotid Body-Like Tumors of Temporal Bone with Particular Reference to Glomus-Jugulare Tumors. M. J. Tamari, R. J. McMahon and E. H. Bergendahl.—p. 350.
Non-Osteogenic Fibroma of Jaw. C. Agazzi and L. Belloni.—p. 365.
Tuberculous Peripharyngeal Abscess. L. L. Titche.—p. 370.
Otosclerosis of Osseous Horizontal Semicircular Canal. E. Seligman and G. E. Shambaugh Jr.—p. 375.
Viral Diseases of Nose and Throat. J. J. Shea—p. 392.
Treatment of Osteomyelitis of Skull Resulting from Ethmoid and Frontal Sinusitis. W. L. Simpson.—p. 399.
Cerebral Venous Thrombosis: Its Occurrence; Its Localization; Its Sources and Sequelae. E. A. Stuart, F. H. O'Brien and W. J. McNally.—p. 406.
Air Currents in Upper Respiratory Tract and Their Clinical Importance. A. W. Proetz.—p. 439.
*Present Status of Tracheotomy in Bulbar Poliomyelitis. R. E. Priest, L. R. Boies, N. F. Goltz and others.—p. 468.
Tracheostomy in Botulism and Residual Poliomyelitis. H. B. Orton.—p. 485.
Benign Tumors of Larynx. P. H. Holinger and K. C. Johnston.—p. 496.

Deafness Due to Dihydrostreptomycin.—A study was made on 11 patients with tuberculosis treated with dihydrostreptomycin. Its therapeutic and toxic effects were compared with those of regular streptomycin, and particular attention was given to the vestibular and auditory mechanisms. It was found that dihydrostreptomycin, whether hydrochloride or sulfate, is toxic to the auditory division of the eighth nerve in doses of 2 or 3 gm. per day, when given for three months or more. It was far more toxic to the auditory mechanism than streptomycin but less toxic to the vestibular apparatus. Streptomycin is therefore probably the drug of choice where long-term treatment is indicated. Loss of vestibular function is preferable to loss of cochlear function. The hearing loss from dihydrostreptomycin is progressive in many cases, even after the drug has been discontinued. The process is irreversible in all cases in which a significant hearing loss exists. In all cases audiometric studies should follow treatment with dihydrostreptomycin.

Tracheotomy in Bulbar Poliomyelitis.—In a devastating epidemic of poliomyelitis that occurred in Minneapolis in 1946, tracheotomy was among the measures used in bulbar cases with secretional obstruction of the pulmonary airways. Since then about 26 papers on tracheotomy in bulbar poliomyelitis have appeared in the world literature. Most authors favor tracheotomy in certain cases of bulbar poliomyelitis. Secretional obstruction to the airway is the main indication, whereas pharyngeal paralysis alone is not. The patient must be unable to clear his own airway of obstructing secretions. Some authors regard tracheotomy as a dangerous and mutilating operation, which should be used mainly as a last resort. Others feel that using it early prevents brain damage by insuring a more adequate oxygen supply. The authors of this paper feel that (1) tracheotomy ought to be done early when needed, (2) it adds little to the risk when done properly, (3) the so-called mutilating nature of the procedure has been exaggerated, (4) it contributes greatly to the patient's chances when he is unable to clear his own airway of secretion, (5) administration of humidified oxygen under positive pressure through the tracheotomy tube is a most important form of adjuvant therapy, (6) criteria for tracheotomy cannot be rigid, it should not be done unless other methods (pharyngeal aspiration, bronchoscopy, and postural drainage) of emptying the patient's airway of obstructing secretions have failed to keep the airway clear, and (7) tracheotomy has a limited but important place in the therapy of bulbar poliomyelitis and that for the patient who needs it, it may be lifesaving.

Cancer Research, Chicago

11:565-652 (Aug.) 1951

SYMPOSIUM ON INTERMEDIARY CARBOHYDRATE METABOLISM IN TUMOR TISSUE

Studies on Reactions of Krebs Citric Acid Cycle in Tumor, with Homogenates, Slices, and in Vivo Technics. V. R. Potter.—p. 565.
Oxidation of C^{14}-Labeled Carbohydrate Intermediates in Tumor and Normal Tissue. R. E. Olson.—p. 571.
Studies on Fate of Isotopically Labeled Metabolites in Oxidative Metabolism of Tumors. S. Weinhouse.—p. 585.
Studies on Carbohydrate and Protein Metabolism of Rat Hepatoma. P. C. Zamecnik, R. B. Loftfield, M. L. Stephenson and J. M. Steele.—p. 592.
Trends in Cancer Research. E. V. Cowdry.—p. 603.
Studies on Lymphocystis Tumor Cells of Fish: II. Granular Structures of Inclusion Substance as Stages of Developmental Cycle of Lymphocystis Virus. R. Weissenberg.—p. 608.
Metabolism of Thyroxine in C57 Mice and in C3H Mice With and Without Mammary Tumors. J. Gross and S. Schwartz.—p. 614.
Nature of Fatty Acids of Rats Growing Walker Carcinoma 256. F. L. Haven, W. R. Bloor and C. Randall.—p. 619.
Effects of Anterior Hypophyseal Transplants on Intrasplenic Ovarian Grafts. M. Silberberg, R. Silberberg and H. V. Leidler.—p. 624.
Adrenal Cortical Function and Radiation-Induced Lymphoid Tumors of Mice. H. S. Kaplan, S. N. Marder and M. B. Brown.—p. 629.
Basal Metabolic Rate and Liver Tumors Due to Azo Dyes. W. L. Miller Jr. and C. A. Baumann.—p. 634.
Synthesis of 3,4-Benzpyrene-5-C^{14} and of 2-Acetylaminofluorene-9-C^{14}. C. Heidelberger and H. S. Rieke.—p. 640.
Intrinsic Tissue Response to Induction of Pulmonary Tumors. J. R. Shapiro and A. Kirschbaum.—p. 644.
Studies on Mechanisms of Metastasis: Distribution of Tumors in Various Organs in Relation to Distribution of Arterial Emboli. D. R. Coman, R. P. deLong and M. McCutcheon.—p. 648.

Florida Medical Association Journal, Jacksonville

38:81-146 (Aug.) 1951

Surgery of Biliary Tract: Personal Experience with 850 Consecutive Cases in Private Practice. L. Grove.—p. 95.
Management of Massive Hemorrhage from Upper Part of Gastrointestinal Tract. F. E. Manulis.—p. 103.
*New Concept of Baby Feeding. W. W. Sackett Jr.—p. 109.
Some Observations on Interrelationships of Allergy and Diseases of Chest. C. Bernstein and S. D. Klotz.—p. 113.

A New Concept of Baby Feeding.—The new concept in baby feeding presented by Sackett is based on a six-hour feeding interval from birth. The following schedule has been evolved in the course of observations on 50 infants, of whom 18 received institutional care. Up to the third or fourth day of life, the breast or bottle is given at 6 a. m., 12 noon, 6 p. m., and 12 midnight. At three to four days, cereal is added to the 6 a. m. and 6 p. m. feedings. At 10 days, strained vegetables are added at noon; peas, beans, and carrots are suggested for starting. At 17 days, strained fruits are added at the 6 p. m. feeding. Cereal is dropped or gradually decreased in quantity at this feeding. Strained meats, orange juice (usually diluted), custards, soups, mashed ripe banana, and hard boiled egg yolk can be added at weekly intervals. Some form of cod liver oil may be worked in at a convenient time. The midnight feeding is dropped at a time convenient to the mother, the earlier the better. Babies may be on a three-meal-a-day schedule when they are 3 weeks old. With this schedule, babies do not cry for a feeding at each awakening period; they learn easily to eat from a spoon, accept new foods well, have less frequent and better formed stools, and are less given to bowel upsets. They quickly learn to take enough food to carry them from one feeding to the next; the mother has longer periods of rest between feedings; and, with the early

V 14
1951

addition of solid foods, supplementary vitamins and minerals become in many cases unnecessary. Although the initial weight gains are less rapid with the six-hour schedule than with the shorter schedules, these discrepancies disappear in two to four months.

Journal of Bone and Joint Surgery, Boston

33A:561-824 (July) 1951. **Partial Index**

Federal Subsidization of Medical Education. J. S. Speed.—p. 561.
Restoring Flexion to Paralytic Elbow. S. Bunnell.—p. 566.
Bow Elbow (Cubitus Varus). D. King and C. Secor.—p. 572.
Club-Foot: Its Incidence, Cause and Treatment: Anatomical-Physiological Study. S. F. Stewart.—p. 577.
Treatment in Legg-Perthes Disease. H. E. Pedersen and H. R. McCarroll.—p. 591.
Cineplastic Muscle Motors for Prostheses of Arm Amputees. A. W. Spittler and I. E. Rosen.—p. 601.
Analysis of 124 Suction-Socket Wearers Followed from 6 to 55 Months. R. Mazet Jr., P. E. McMaster and C. G. Hutter.—p. 618.
Comparison of Vital Capacity in Normal and Poliomyelitic Subjects. A. Y. Werner, G. R. Zumeta, R. W. Newman and H. M. Hines.—p. 628.
*Low-Back and Sciatic Pain: Results of Treatment. J. S. Barr.—p. 633.
Osteoperiosteal Ribbon Grafts in Undisplaced, Ununited Fractures of Tibia. I. M. Flinn Jr.—p. 650.
*One Hundred Fractures of Femur Treated by Means of Diamond-Shaped Medullary Nail. D. M. Street.—p. 659.
*Results in Medullary Nailing of 95 Fresh Fractures of Femur. J. Böhler.—p. 670.
Posterior Bone Block of Ankle for Paralytic Equinus: End-Result Study. A. J. Ingram and J. M. Hundley.—p. 679.
Triphalangeal Thumb. H. Milch.—p. 692.
Motor Age Test: Measurement of Motor Handicaps in Children with Neuromuscular Disorders Such as Cerebral Palsy. M. K. Johnson, F. N. Zuck and K. Wingate.—p. 698.
Coccygodynia as Referred Pain. R. J. Dittrich.—p. 715.
Dislocation of Hip Combined with Fracture of Shaft of Femur on the Same Side. E. Dehne and E. W. Immermann.—p. 731.
Traumatic Dislocation of Hip: Survey of 204 Cases Covering a Period of 21 Years. V. P. Thompson and H. C. Epstein.—p. 746.

Treatment of Sciatic and Low-Back Pain.—Sciatic and low-back pain is felt in ill-defined anatomic portions of the back and lower extremity. When sciatica is suspected, vulnerable areas in the lower extremity, such as the metatarsal-phalangeal joints of the foot (plantar digital neuroma), the region of the internal malleolus, the neck of the fibula (osteochondroma), the popliteal space (bursa or cyst), and the sacrosciatic notch should be checked for nerve pressure. Many factors may cause low-back and sciatic pain, and it is probable that there are multiple factors in each case, but a painful back and sciatica are not synonymous with a protruded disk and immediate surgical excision is not the equivalent of cure. The authors reviewed the records of the Massachusetts General Hospital for patients operated on for an intervertebral disk lesion of the lumbar spine between 1941 and 1945 inclusive. Of a total of 495 cases, 166 had the combined excision-fusion operation and 329 (67%) had excision only. This study confirms numerous previous reports on the efficacy of disk excision for relief of severe intractable sciatic pain, in that 97% of the patients were satisfactorily relieved of sciatic pain. Although statistical proof is not yet available, there is strong evidence for the superiority of the combined fusion-excision operation. Although sciatic pain is usually relieved by disk excision, this cannot be said of low-back pain. Many observers believe that disk excision is not a satisfactory method for low-back pain and that it should be reserved for intractable sciatica.

Diamond-Shaped Medullary Nail in Fractures of Femur.—In his method of medullary nailing of fractures of the femur, Küntscher has substituted for the original V-shaped nail one with a cloverleaf shape in cross section, which is stronger and follows a guide pin more easily. In the United States Hansen has designed a diamond-shaped nail. This was used in 100 cases of fracture of the femur reported by Street. The nail can be inserted by the closed or the open method. In the closed method the fracture is reduced under fluoroscopic or roentgenographic control. In the open method, the fracture is exposed and reduced under direct vision. Open reduction is necessary in cases requiring revision of callus; removal of plates or screws after unsuccessful fixation; insertion of supplementary wire sutures or screws; reduction of a segmental fracture; or osteotomy for malunion, femur shortening, or femur lengthening. Furthermore, the open method is more precise and requires less experience in manipulation, and the operative time is more predictable. In the present series, 11 patients were treated by closed and 89 by open reduction. The closed method is not without danger, because of injuries resulting from exposure to x-rays. The risk of infection in open reduction is apparently not great, as only 2 patients out of 89 showed evidence of infection. After discussing the types of fractures best suited for this treatment, Street says that the fact that 73 fresh fractures promptly united, while encouraging, is not so surprising as the union of 17 fractures in which other methods had been tried without success. The unsuccessful types of fixation included skeletal traction, slotted plate, dual plating, onlay bone graft, plate with a bone graft, medullary bone peg, and multiple transfixion screws. Of the 90 cases followed for six months or longer, union resulted in 88. The remaining two patients had no pain, and their fractures remained stable, but roentgenograms taken at 45 and 54 weeks showed a persisting fracture line, and callus was not sufficient for complete union. The author concludes that disability is greatly reduced and that patients undergo less pain and fewer complications with use of the medullary nail than with other methods.

Results of Medullary Nailing in Fractures of Femur.—Of a total of 988 fractures of the femur treated between 1941 and 1948 at the accident clinic in Vienna only 151 (15.3%) were treated by medullary nailing. This fact is cited by Böhler as an indication that nailing is indicated in a comparatively small number of cases. This study deals only with 95 fresh fractures in which nailing was done, including 61 closed fractures, 26 compound fractures, and 8 fractures in pathological conditions. In the beginning, Böhler was reluctant to use open reduction with medullary nailing, but since the modern antibiotics have become available, he has done more open medullary nailing. Of the 26 compound fractures, all but 3 were treated by open nailing, but nearly all the closed fractures were treated by closed nailing. Böhler concludes that at present medullary nailing is the best method for transverse and short oblique closed fractures of the femur and for most open fractures of the femur, provided the proper technique is employed. The main requisite is that after the operation fixation should be so firm that the patient can walk without any additional support. To ensure this, additional sutures with 1 mm. wire should always be used in open operations. The nail should be strong enough to replace fully the fractured femur in weight-bearing.

Journal Lab. and Clinical Medicine, St. Louis

38:1-166 (July) 1951

Demonstration of Thrombocytopenic Factor in Blood of Patients with Thrombocytopenic Purpura. W. J. Harrington, V. Minnich, J. W. Hollingsworth and C. V. Moore.—p. 1.
Enzyme Studies on Human Blood. G. Y. Shinowara.—p. 11.
Spectrophotometric Studies on Clot Density. S. Losner, B. W. Volk, M. Jacobi and S. Newhouse.—p. 28.
Biochemical Studies on Leucocytes: I. Phosphatase Activity in Health, Leucocytosis, and Myelocytic Leucemia. W. N. Valentine and W. S. Beck.—p. 39.
Morphologic Distribution of Intravenously Injected Fatty Chyle and Artificial Fat Emulsion in Rats and Dogs. R. G. Murray and S. Freeman.—p. 56.
Tolerance of Human Beings to Intravenous Infusions of 15 Per Cent Invert Sugar. J. J. Weinstein.—p. 70.
Effects of Dietary Deprivation of Potassium on Heart Glycogen and on Blood Glycolysis. S. Seifter.—p. 78.
Observations on Absorption, Utilization, and Excretion of Vitamin B_{12}. C. L. Conley, J. R. Krevans, B. F. Chow and others.—p. 84.
Biochemical Studies with "Citrovorum Factor." H. P. Broquist, E. L. R. Stokstad and T. H. Jukes.—p. 95.
Effect of Aureomycin and Penicillin on Experimental Actinomycosis Infections in Mice. R. S. Geister and E. Meyer.—p. 101.
Acute Effects of Parathyroid Hormone on Metabolism of Endogenous Phosphate. C. R. Kleeman and R. E. Cooke.—p. 112.
Critical Evaluation of Toxicity of Pemphigus Serum (Pels-Macht Test). G. D. Baldridge and A. M. Kligman.—p. 128.
Effect of Cortisone on Tuberculosis in Guinea Pig. R. G. Bloch, K. Vennesland and C. Gurney.—p. 133.

Journal-Lancet, Minneapolis

71:303-344 (Aug.) 1951

*"Second Look" in Cancer Surgery: A Patient with Colic Cancer and Involved Lymph Nodes Negative on the "Sixth-Look." O. H. Wangensteen, F. J. Lewis and L. A. Tongen.—p. 303.
Diagnosis of Chronic Subdural Hematoma. C. H. Millikan.—p. 308.
Diurnal Rhythmic Changes in Blood Eosinophil Levels in Health and in Certain Diseases. F. Halberg, M. B. Visscher, E. B. Flink and others.—p. 312.
Heart Muscle Extract in Treatment of Cardiovascular Diseases. A. Weiss and D. Feldman.—p. 320.
Electroconvulsive Therapy in Psychoses Complicated by Cardiovascular Disease: Report of Fatality. C. J. Rowe, B. C. Schiele and J. W. Labree.—p. 323.
Comments on Selection of Digitalis Preparation. C. H. Scheifley.—p 327.
Eyegrounds of Toxemia in Pregnancy. H. W. Hawn.—p. 333.

The "Second-Look" in Cancer Surgery.—Wangensteen and associates present the detailed history of a woman, 60, who had a large cancer of the cecum and ascending colon with gross involvement of the regional lymph nodes. During a period of less than 27 months, five inspections of the abdomen were made, and, on each occasion save the last, residual cancer was found and removed. It is believed that this patient may now be cured. Experience with the "second-look" method suggests that it may give the best results in cases with cancer of the colon. Of 17 such patients in whom the excised regional lymph nodes exhibited gross or microscopic evidence of cancer at the first operation, 11 are now free from cancer. If time ultimately indicates that these patients actually are cured, then the second-look procedure is definitely worth while, because otherwise the cure rate in cases with lymph node involvement in any cancer is low. The experience with the second-look procedure for cancers of the colon, rectum, and stomach suggests that, at the time of the first re-entry, if the situation appears at all favorable, and detectable evidence of residual cancer is present, the aortic lymph nodes should be removed. In infraperitoneally located cancer of the rectum with involved lymph nodes, a second inspection of the perineum and of the peritoneal cavity is in order. The results of the second-look procedure are poorest in gastric cancers showing residual cancer on the first re-entry. However, within the last year the surgeons of this clinic, in operating for gastric cancer, have been removing routinely the spleen and the lymph node bearing tissue about the borders of the pancreas. It remains to be determined what percentage of patients found to have residual cancer at the first "second-look" will prove on subsequent re-entry to be free from cancer.

Journal of the Mount Sinai Hospital, New York

18:71-140 (July-Aug.) 1951

Emotional Factors in Etiology of Internal Diseases. J. Groen.—p. 71.
Experimental Study of Effect of Aureomycin upon Circulation of Intestine Subjected to Vascular Injury. N. Rabinovici and J. Fine.—p. 90.
Conservative Surgery of Mandible: Report of Five Cases. L. Stern Jr.—p. 103.
Effects of Dihydroergocornine on Cardiovascular System in Man: Blood Pressure, Heart Rate, and Resting Electrocardiogram. H. S. Arai, L. Pordy and A. M. Master.—p. 119.
Intussusception of Appendix: Report of Case and Review of Literature. H. D. Zeifer.—p. 125.
Coincidence of Trauma in Presence of Wilms Tumor. M. Swick.—p. 131.
Electric Filter for Esophageal Electrocardiography for Attenuation of Extraneous Low Frequency Potential. A. Grishman and M. H. Palevin.—p. 134.

Journal of Nervous and Mental Disease, New York

114:95-188 (Aug.) 1951

Application of Sociometric Technique to Study of Lobotomized Patients. J. S. Bockoven and R. W. Hyde.—p. 95.
Evaluation of "Draw-A-Person" Test (Modified) in Thalamotomy with Particular Reference to Body Image. H. Freed and J. T. Pastor.—p. 106.
Mind, Brain and Psychoneurosis. A. E. Taft.—p. 121.
Syndrome of Sensorimotor Induction in Combined Cerebellar and Labyrinthine Injury. L. Halpern.—p. 137.
*Electroshock Therapy in Schizophrenia: Statistical Survey of 455 Cases. D. M. Palmer, H. E. Sprang and C. L. Hans.—p. 162.
Postgraduate Education in Psychiatry. M. Thorner.—p. 172.

Electroshock Therapy of Schizophrenia.—Of 455 men (veterans) with schizophrenia who received a single series of electroshock treatments, 198 (43.5%) improved. Of these 128 were discharged, the remaining 70 having relapsed after initial improvement. An additional 48 patients relapsed after discharge, so that only 80 remained of the original 198 improved cases. There was a definite relationship between length of illness and remission following shock. Those who remained discharged had a mean illness period of 15 months, while those who remained hospitalized had been ill for an average of over three years. Those with catatonia seem to respond somewhat better than those with hebephrenia. Satisfactory response seemed to be more frequent among younger than among older patients, but further analysis showed that the patients who responded satisfactorily had been ill a shorter period, so that duration of illness, not age, was the important prognostic factor.

J. Neuropathology & Exper. Neurology, Baltimore

10:231-342 (July) 1951. **Partial Index**

Neurotoxicity of 8-Aminoquinolines: III. Effects of Pentaquine, Isopentaquine, Primaquine, and Pamaquine on Central Nervous System of Rhesus Monkey. I. G. Schmidt and L. H. Schmidt.—p. 231.
Observations on Cerebral Arteriosclerosis. G. Eros.—p. 257.
Ependymoma: Critical Re-evaluation of Classification with Report of Cases. C. E. Troland, J. F. Kendrick, P. F. Sahyoun and F. B. Mandeville.—p. 295.
Vascular Changes in Brain in Fatality Following Electroshock. E. Liban, L. Halpern and J. Rozanski.—p. 309.
Distribution of Chromidia in Sympathetic Ganglion Cells in Man and Dogs with Hypertension. A. J. Nedzel.—p. 319.
Histophysiological Effects of Arsenic and Its Derivatives on Central Nervous System, and Particularly on the Third Element of Central Nervous System. S. Grzycki and B. Kobusówna.—p. 325.

Journal of Urology, Baltimore

66:1-152 (July) 1951

Experimental Urolithiasis: III. Prevention and Dissolution of Calculi by Alteration of Urinary pH. C. W. Vermeulen, H. D. Ragins, W. J. Grove and R. Goetz.—p. 1.
Id.: IV. Prevention of Magnesium Ammonium Phosphate Calculi by Reducing Magnesium Intake or by Feeding Aluminum Gel. C. W. Vermeulen, R. Goetz, H. D. Ragins and W. J. Grove.—p. 6.
Relationship Between Alkaline Phosphatase in Kidney and Urinary Calculi. J. J. Cordonnier and J. A. Miller.—p. 12.
Renal Hemodynamics in Clinical Urology. H. Grabstald.—p. 19.
Preservation of Renal Function in Polycystic Disease. F. N. Buck, R. C. Bunts and A. I. Dodson.—p. 46.
*Results of Treatment of Hydronephrosis by Plastic Surgical Procedure With and Without T-Tube Drainage. R. R. Berneike and C. L. Deming.—p. 68.
Intubated Ureterotomy. D. M. Davis.—p. 77.
Efficacy of Plastic Ureteral and Urethral Catheters for Constant Drainage. H. P. Brown and J. H. Harrison.—p. 85.
Cytodynamic Properties of Urinary Neoplasms: II. Maintenance of "Hypernephroma" in Vitro. R. J. Stein and R. G. Bunge.—p. 103.
Primary Lymphosarcomatosis of Kidneys, Adrenal Glands and Perirenal Adipose Tissue. F. M. Davis and R. G. Olivetti.—p. 106.
Ureteral Ectopia Associated with Renal Dystopia. R. R. Landes.—p. 115.
Primary Amyloid Tumor of Bladder: Report of Case. P. R. Roen and J. Wiener.—p. 119.
Prostatic Carcinoma with Metastasis to Testicle. A. C. Bradham.—p. 122.
Genito-Urinary Tract Infections: Experiences with in Vitro Sensitivity Tests in Choice of Antibiotics. J. C. Hayward, J. B. Glanton and L. M. Orr.—p. 127.
Extra-Urethral Confines of Urethrographic Contrast Medium. A. R. Fernicola.—p. 132.
Interpretation of Translumbar Arteriograms. P. G. Smith, T. W. Rush and A. T. Evans.—p. 145.

Surgical Treatment of Hydronephrosis.—Some type of plastic surgical procedure is required to conserve a hydronephrotic kidney, but no one surgical procedure has been generally accepted for this purpose. Berneike and Deming describe an operation they have used in 30 cases during the past seven years for the correction of uteropelvic obstruction, which they found more successful than other techniques. It involves resection of the pelvis and uteropelvic junction and anastomosis of the ureter to the most dependent portion of the remaining pelvis. The operation failed in three cases, but 27 patients have had good anatomic, functional, and symptomatic results. In patients followed for up to seven years the renal function has been maintained and roentgenograms show no tendency for late constriction at the site of the anastomosis. The ureteral tube is an effective drain and splint and does less damage than other appliances. The upper arm of the tube splints the anastomosis adequately and prevents collecting of the urine in the pelvis. The infected renal scar that results from nephrostomy is avoided. The kidney

V 14
1951

itself is not injured. The position of the drainage site below the anastomosis rather than above it precludes the development of a troublesome fistula. Six of the 30 patients required no T-tube or other urinary drain or splint, but these did not have infection before operation. The results were good in five.

Maine Medical Association Journal, Portland

42:249-278 (Aug.) 1951

Acute Obstruction of Small Intestine. J. Spencer and L. T. Thaxter. —p. 249.
A Few Practical Points in Treatment of Acute Head Injuries. G. L. Maltby.—p. 256.
Treatment of Acne in Female with Hormone. O. R. Johnson.—p. 258.
Common Methods in Diagnosis of Hemorrhagic Diseases. F. F. Ferguson. —p. 259.
Fatal Hemorrhage Due to Tracheotomy.—p. 261.
Hemorrhagic Tendency of Aspirin Therapy: Case Report. J. H. Schaeffer, E. R. Blaisdell and S. E. Herrick Jr.—p. 262.
Analysis of Chest Survey Program at the Maine Medical Center. J. Spencer and J. H. Schaeffer.—p. 264.
Eyeground Changes of Particular Importance to General Practitioner. P. Maier.—p. 266.

Medical Annals of District of Columbia, Washington

20:409-464 (Aug.) 1951

Some Recent Advances in Diagnosis and Treatment of Amebiasis. W. A. Sodeman.—p. 409.
Clinical Value of Complement Fixation Test for Hepatic Amebiasis. T. A. Haedicke.—p. 415.
Practical Aspects of Antithyroid Therapy. L. H. Kyle.—p. 421.
*Brain Abscess as Complication of Tonsillectomy and Adenoidectomy with Clinicopathologic Report of Three Fatal Cases. H. W. Bischoff, F. R. Leyva, E. C. Rice and W. Haymaker.—p. 429.
Friedländer's Pneumonia: Report of Two Cases Treated with Chloromycetin. E. Wasserman and H. Z. Pomerantz.—p. 435.

Brain Abscess as Complication of Tonsillectomy.—This report deals with three cases of brain abscess following routine tonsillectomy and adenoidectomy. The ages of the patients were 7, 8, and 22 years. In the first case, three and a half months elapsed between operation and the development of cerebral symptoms; in the second case, 11 days elapsed; and in the third case, there was symptomatic evidence of cerebral involvement within a few hours after operation. In two of the cases the abscess was in the left frontal lobe, and in the third it was in the right parietal lobe adjacent to the lateral ventricle. It is assumed that the infection in each case was blood-borne. In neither of the two youngest was the diagnosis of brain abscess ever considered, nor was the tonsillectomy thought of as an etiological factor. The occurrence of the illness of one of the children during an epidemic of poliomyelitis served to obscure the correct diagnosis of brain abscess. It is believed that similar brain and meningeal infections may occur during such epidemics, and the diagnosis may be wrongly ascribed to poliomyelitis in cases in which autopsy is not performed. In view of the increasing tendency to institute chemotherapy or antibiotic therapy before and after removal of the tonsils and adenoids, it would seem likely that brain abscess and other infections would become increasingly less frequent after tonsillectomy.

Missouri State Medical Assn. Journal, St. Louis

48:597-668 (Aug.) 1951

Sarcoidosis. A. L. Banyai.—p. 613.
Intravenous Administration of Pentothal Sodium in Combination with Other Anesthetic Agents and Methods. R. C. Adams.—p. 618.
Diagnosis and Treatment of Conditions of Exposure: Trench Foot, Immersion Foot and Frostbite. J. C. Edwards.—p. 621.
Ectopic Pregnancy. W. D. Beacham, C. G. Collins, D. W. Beacham and others.—p. 629.

48:669-748 (Sept.) 1951

Clinical Evaluation of Trocinate, Antispasmodic. W. C. MacDonald. —p. 685.
Head Injuries in War. H. Schwartz.—p. 686.
War Injuries of Spinal Cord and Peripheral Nerves. H. Schwartz.—p. 692.
Study Concerning Nutrition During Early Infancy: Comparison of Infants Fed Biolac with Those Receiving Evaporated Milk Formulae. R. J. LaDriere and R. J. Burke.—p. 695.
Rh and Hr Sensitization in Obstetric Practice. W. D. Beacham, J. W. Davenport Jr. and D. W. Beacham.—p. 701.

Nebraska State Medical Journal, Lincoln

36:253-280 (Aug.) 1951

Diagnosis and Treatment of Primary Carcinoma of Lip. J. M. Neely. —p. 255.
Management of Carcinoma of Stomach. A. C. Johnson.—p. 260.
Organic Disorders of Colon: As seen by Radiologist. C. C. Hardy. —p. 265.
Organic Lesions of Colon: As Revealed by Laboratory. J. P. Tollman. —p. 267.
Functional Disorders of Colon and Their Management: From Viewpoint of Psychiatrist. R. S. Wington.—p. 268.
Functional and Organic Disorders of Colon: From Viewpoint of Proctologist. J. B. Christensen.—p. 272.

New England Journal of Medicine, Boston

245:159-196 (Aug. 2) 1951

Placenta Accreta: Clinical Manifestations and Conservative Management. R. P. McKeogh and E. D'Errico.—p. 159.
*Use of Antibiotics and Vasodilators in Atrophic Rhinitis (Ozena): Preliminary Report. H. J. Sternstein.—p. 165.
*Use of ACTH in Acute Viral Hepatitis. J. W. Colbert Jr., J. F. Holland, I. Heissler and M. Knowlton.—p. 172.
False-Positive Test for Pheochromocytoma with "Adrenolytic" Compound. E. Meilman.—p. 177.
Plastic Surgery: Harelip and Cleft Palate. B. Cannon and D. Fisher. —p. 179.

Antibiotics and Vasodilators in Atrophic Rhinitis.—A new treatment of atrophic rhinitis with ozena, which combines the local use of antibiotics with vasodilators, was tried in four men and nine women between the ages of 27 and 73. The following combinations were employed: streptomycin, histamine, and niacin; streptomycin and priscoline® (2-benzyl-2 imidazoline hydrochloride); or streptomycin, penicillin, and priscoline.® Bacitracin, in aqueous concentration of 100 to 300 units per cubic centimeter, was usually given if there were untoward reactions to penicillin. When Bacillus proteus was the predominant organism, gantrisin® (3,4-dimethyl-5-sulfanilamido-isoxazole) in 20% aqueous concentration was administered both locally and in tablet form with a total daily dose of 4 gm. Streptomycin and penicillin were prescribed in aqueous concentrations of 20,000 to 30,000 units per cubic centimeter, and about 0.5 cc. was given in each nostril for 10 minutes four times daily, with the patient's head in a low lateral position. Histamine diphosphate, in maximal dilutions of 1:5,000 or 1:1,000, was given subcutaneously in increasing doses of 0.10 to 0.50 mg. twice weekly, depending on the flush reaction produced. Priscoline® was given orally in doses of 25 to 50 mg. three to four times daily. Niacin was given in tablets of 50 mg. from four to six times daily. Four of the 13 patients showed striking improvement, with complete disappearance of odor, crust formation, and organisms of the Klebsiella group. In addition, local examination revealed an increase in moisture and circulatory filling of the turbinal mucous membrane and a partial return of the sense of smell. Six patients showed significant improvement, with complete disappearance of odor and Klebsiella organisms, considerable elimination of crusts, and some increase in moisture and turbinal filling. There was no return of the sense of smell. Three patients improved slightly, with complete or partial disappearance of odor and Klebsiella organisms and a slight reduction in crusts but no change in the appearance of the mucosa. Results thus far obtained suggest that the combined use of properly selected antibiotics and vasodilators can effectively eliminate odor and crusts and promote reversal of the regressive changes in atrophic rhinitis with ozena.

Corticotropin in Acute Viral Hepatitis.—Five enlisted men of the United States Army of Occupation in Germany, aged less than 25, with mild or moderately severe viral hepatitis, were treated with corticotropin (ACTH). The drug was administered intramuscularly in doses of 25 mg. every six hours, for periods ranging between 9 and 21 days. The total dose was from 825 to 1,925 mg. The patients were placed on a diet containing 4,200 calories, supplemented with vitamins and dried (brewer's) yeast but with salt intake restricted. All patients remained in bed until all symptoms and signs of hepatitis had disappeared and the retention of bromsulfalein in the blood measured 6% or less. Pronounced symptomatic improvement occurred promptly and was associated in all patients with a falling serum bilirubin concentration. The course of the disease in one patient, in whom

remission was associated with administration of corticotropin and relapse with withdrawal of the drug on two occasions, points to a beneficial effect of corticotropin therapy in acute viral hepatitis. On withdrawal of corticotropin arthralgia developed in four patients, and in one of them an effusion into the knee joint was confirmed by x-ray examination. The diuresis occurring during the period of relative adrenocortical hypofunction following the abrupt discontinuance of the drug may have produced a sodium loss that resulted in muscle cramps, but the joint effusion in one of the patients suggested that more than electrolyte imbalance was needed to explain the symptoms. Sensitization to corticotropin should be mentioned as the possible cause of the arthralgia. Other untoward effects observed were glycosuria, hypertension, edema, ascites, moon face, and acne.

Surgery, St. Louis

30:275-436 (Aug.) 1951

Surgical Treatment of Pure Pulmonic Stenosis: Description of Expansible Valvulotome. W. H. Muller Jr. and W. P. Longmire Jr.—p. 275.
Experimental Production and Closure of Atrial Septal Defects, with Observations of Physiologic Effects. W. B. Martin and H. E. Essex. —p. 283.
*Suppurative Pelvic Thrombophlebitis: I. Incidence, Pathology, and Etiology. Study of 70 Patients Treated by Ligation of Inferior Vena Cava and Ovarian Vessels. C. G. Collins, E. A. MacCallum, E. W. Nelson and others.—p. 298.
*Id.: II. Symptomatology and Diagnosis. Study of 70 Patients Treated by Ligation of Inferior Vena Cava and Ovarian Veins. C. G. Collins, E. W. Nelson, J. H. Collins and others.—p. 311.
*Id.: III. Surgical Technique. Study of 70 Patients Treated by Ligation of Inferior Vena Cava and Ovarian Veins. C. G. Collins and W. B. Ayers.—p. 319.
Tumors of Childhood: Surgeon's Viewpoint. C. G. Peterson and G. Gilmer Jr.—p. 329.
Combined Abdominoperineal Excision of Rectum—Plan for Standardization of Proximal Extent of Dissection. D. State.—p. 349.
Fascia Lata Transplants for Resected Cervical Esophagus. I. D. Baronofsky and J. Hilger.—p. 355.
Effects of Various Hypertonic Sodium Salt Solutions on Cisternal Pressure. B. J. Wilson, R. F. Jones, S. T. Coleman and C. A. Moyer. —p. 361.

Incidence and Etiology of Suppurative Pelvic Thrombophlebitis.—The authors studied 70 patients with suppurative pelvic thrombophlebitis treated by ligation of the inferior vena cava. They show that suppurative pelvic thrombophlebitis is a distinct entity resulting from sepsis affecting the pelvic veins. The resulting purulent clots tend to break off in showers as small infected emboli. This can occur even with massive antibiotic and anticoagulant therapy, and the result is development of metastatic abscess. Death is usually due to maintenance of a septicemic state by the original focus, secondary abscesses, or both. Prevention of embolism and limitation of the spread of suppurative pelvic thrombophlebitis by ligation of the inferior vena cava and ovarian veins should permit recovery. From a study of the material removed at the time of operation for suppurative pelvic thrombophlebitis complicating delivery or abortion, pelvic abscesses, or radium application, the authors believe that infection of the wall of the vein causes deposition of fibrin on the infected intimal surface, with the development of a thrombus, which later tends to liquefy in the presence of bacterial invasion, resulting in an acute inflammatory reaction with local necrosis. The initial inflammatory involvement of the wall of the vein may result either from infection of the surrounding perivascular tissue or from extension along the length of the vein from a more distant location. Suppurative pelvic thrombophlebitis is a condition not to be confused with phlebothrombosis or thrombophlebitis of the veins of the leg, in which there is a nonsuppurative clot with danger of fatal pulmonary embolism. In thrombophlebitis of the veins of the leg (phlegmasia alba dolens), an adherent, infected, but not often suppurative, clot is present, and minor aseptic pulmonary infarction occurs infrequently and lethal pulmonary embolism rarely. In suppurative pelvic thrombophlebitis, however, infection frequently precedes the clotting process and later there are suppurative and fragmentary tendencies, death resulting from multiple embolic abscesses or septicemia.

Symptomatology and Diagnosis of Suppurative Pelvic Thrombophlebitis.—The diagnosis of suppurative pelvic thrombophlebitis is often difficult. Only by careful questioning concerning previous pregnancies and constant awareness of the possibility of the presence of this disease can diagnostic errors be reduced. The triad of symptoms—chills, fever, and increased pulse rate—in any puerperal woman demands consideration of suppurative pelvic thrombophlebitis in diagnosis. Repeated examination of the chest, including roentgenography, is mandatory. In the present series roentgenograms of the chest revealed pulmonary shadows in 46% of the patients. In some cases there were no clinical signs or symptoms of infarction, but the roentgenograms of the chest were diagnostic. Careful pelvic examination will reveal thrombosed vaginal or pelvic veins in 60% of the cases. However, neither the absence of palpable thrombosis of pelvic veins nor the presence of symptoms of thrombosis of the veins of the legs rules out suppurative pelvic thrombophlebitis.

Ligation of Inferior Vena Cava and Ovarian Veins in Suppurative Pelvic Thrombophlebitis.—In the treatment of suppurative pelvic thrombophlebitis ligation is indicated in (1) any patient having postabortal or postpartum sepsis who fails to respond to medical regimen in four or five days, (2) any patient with sepsis following delivery or abortion in whom a pulmonary infarct develops during conservative treatment, or (3) any patient admitted with postpartum sepsis and infarction. The ligation is performed through an extraperitoneal approach if the patient has previously had a hysterectomy, since the continuity of the ovarian vessels with the uterus has already been interrupted. The transabdominal approach is employed in all other cases. The technique of each approach is described. If the sympathetic chains have not been interrupted, daily lumbar sympathetic blocks are performed for four or five days postoperatively. If both sympathetic chains have been cut, these blocks are not necessary. If only one sympathetic chain has been interrupted at operation (usually the right), then lumbar sympathetic blocks are performed on the uninterrupted side for four or five days. In most patients the veins in the leg proper were not involved and their valves were undamaged; therefore, elastic stockings were recommended only when ligation of the inferior vena cava was performed for phlebothrombosis or thrombophlebitis of the leg veins. The patient is ambulatory within 24 to 48 hours of operation, and, except for utilization of lumbar sympathetic blocks, postoperative care is no different from that following any laparotomy.

V 14
1951

Western J. Surg., Obst. & Gynecology, Portland, Ore.

59:375-430 (Aug.) 1951

Volvulus of Small Intestine: Study of 30 Cases. R. E. McKechnie. —p. 375.
Regional Anesthesia for Vaginal Breech Delivery. R. H. Marquette. —p. 378.
Simplified Approach to Origin of Common Femoral Vein. H. P. Totten. —p. 382.
*Experiences in Use of Frozen Bone. A. M. Okelberry.—p. 385.
Surgery of Ruptured Spleen. S. L. Ward.—p. 390.
Exenteration of Pelvic Viscera in Male. J. M. Beal and C. S. Kipen. —p. 396.
Amniotic Fluid Pulmonary Embolism: Report of Presumptive Case with Recovery. L. M. Miles.—p. 403.
Giant Follicle Lymphoma Followed by Pregnancies: Case Report. W. R. Frazier.—p. 405.
Kyphoscoliosis and Pregnancy: Its Cardiorespiratory Implications. C. S. Fearl.—p. 411.

Use of Frozen Bone.—The preserved bone that Okelberry used over a period of one year was obtained from 36 patients on whom operative procedures were done that required removal of bone and from three other patients from whom more iliac bone was excised than was necessary for the operation being done. Bone to be saved for future use is immediately placed in a sterile bottle, which is then capped and put into a larger sterile bottle, firmly capped, and a sterile glove is stretched over the cap and neck of the bottle. After the whole is wrapped in two sterile towels, the package is labelled and is placed in the deep freezer. The temperature is maintained at —20 F. The bone is frozen while still moist and is thus preserved in its own fluid. In this way it is not necessary to add Ringer's solution or citrated blood to keep the bone moist. Thirty-six bone grafting operations were done in which refrigerated homologous bone was used. The one infection occurred in a previously infected compound fracture of the tibia. There was failure of union in another tibial defect, and in one patient pseudarthrosis of the spine developed. In the other 33 cases the results were good.

FOREIGN

Brain, London

74:115-248 (June) 1951

Progressive Dystrophy of External Ocular Muscles (Ocular Myopathy). L. G. Kiloh and S. Nevin.—p. 115.
Review of Symptoms and Signs of Acoustic Neurofibromata. C. H. Edwards and J. H. Paterson.—p. 144.
*Familial Incidence of Disseminated Sclerosis and Its Significance. R. T. C. Pratt, N. D. Compston and D. McAlpine.—p. 191.
Experimental Study of Hippocampal Connexions of Cingulate Cortex in Rabbit. W. R. Adey.—p. 233.

Familial Incidence of Multiple Sclerosis.—Pratt and associates believe that the familial incidence of multiple sclerosis is greater than reports seem to indicate. They collected from the literature 184 families in which more than one case occurred and record an additional 33 families. In a series of 168 consecutive cases of multiple sclerosis seen by the authors over 18 months, there were 12 instances of one or more relatives being similarly affected. In an earlier series of 142 patients, in which the inquiry was more limited, there was a family history of the disease on eight occasions. Therefore, in a total of 310 cases the familial incidence was 6.5%. The case histories of affected members of families are recorded. The incidence of multiple sclerosis in the sibs of 168 persons with the disease and in the parents of 310 diseased persons is shown to be significantly higher than that expected on the basis of a random distribution of the disease. Also described are the occurrence of the disease in a mother and four of her daughters and an instance of the disease occurring by direct transmission in three generations. The clinical features and relative frequency of certain familial degenerative disorders of the spinal cord and of multiple sclerosis are compared. The present study supports the view that a genetic factor is present in multiple sclerosis and that there is evidence for both a dominant and a recessive mode of inheritance.

British Journal of Ophthalmology, London

35:445-508 (Aug.) 1951. **Partial Index**

Ocular Tension in Glaucoma Simplex. D. Langley and H. Swanljung.—p. 445.
Effect of Para-Aminosalicylic Acid (PAS) Alone and in Association with Streptomycin on Experimental Ocular Tuberculosis. N. W. Horne and J. Macaskill.—p. 459.
Sight of Undergraduates: Loss of Visual Acuity. R. W. Parnell.—p. 467.
Angiography of Normal Ophthalmic Artery and Choroidal Plexus of Eye. P. H. Schurr.—p. 473.
Conjunctival Angioscopy. P. Weinstein and J. Forgács.—p. 479.
Binocular Vision in Light Adaptation and Dark Adaptation in Normal Subjects and Coal-Miners. D. A. Campbell, R. Harrison and J. Vertigen.—p. 484.
Ophthalmic International Standards, 1950. J. W. Nordenson.—p. 496.

British Journal of Plastic Surgery, Edinburgh

4:81-156 (July) 1951. **Partial Index**

Experimental Approach to Homotransplant Problem in Plastic Surgery: Use of Multiple Donors. W. J. Dempster and B. Lennox.—p. 81.
Local Factors in Histogenesis of Hypertrophic Scars. A. Glucksmann.—p. 88.
*Operative Aspects of Postural Ischemia with Hexamethonium Bromide. C. R. McLaughlin and J. Watson.—p. 121.
Vascularisation of Tendon Graft. F. Braithwaite and J. G. Brockis.—p. 130.
*Sarcoma Following X-Ray Therapy for Graves' Disease. P. H. Jayes and R. H. Dale.—p. 147.

Postural Ischemia with Hexamethonium Bromide.—McLaughlin and Watson feel that in view of the highly vascular areas in which the plastic surgeon works, he should be particularly concerned with new techniques that promise to reduce bleeding at operation. They review recent reports on one of these techniques, in which certain methonium compounds are used in association with posture to reduce blood pressure and thus diminish bleeding. Most of these reports having been contributed by anesthetists and research workers, the present review discusses some of the strictly surgical aspects of the method. The authors used hexamethonium bromide in all but 1 of 34 plastic operations, involving tubed pedicles, forehead flaps, bone grafts, free grafts, inlay grafts, auricular grafts, mammaplasty, lymphedema, rotation flaps to face, and abdominal flaps. In 31 of the 34 operations, a striking degree of ischemia in the operative field was found, and a number of usually tedious procedures were completed in an encouragingly short time. The indications and possible dangers of the method are discussed.

Sarcoma Following X-Ray Therapy for Graves' Disease.—In the case here described sarcoma appeared in tissues of the neck that had been burned by x-rays in the treatment of Graves' disease 30 years before. The tumor was a spindle cell sarcoma and had the clinical characteristics of fibrosarcoma protuberans. Sixteen months after removal of the neoplasm the patient was still in excellent health. There was no evidence of local or metastatic spread. Jayes and Dale say that within seven years of discovery of x-rays, cases of malignant disease supervening on chronic x-ray dermatitis were being reported. The majority of tumors were squamous cell carcinomas, but cases of sarcoma occurred occasionally. The latter were especially common following the x-ray treatment of lupus vulgaris. It seems that chronic inflammatory tissue is more susceptible than normal connective tissue to the development of sarcoma following exposure to x-rays.

British Medical Journal, London

2:251-310 (Aug. 4) 1951

Jenner's Cowpox Inoculation. A. W. Downie.—p. 251.
Idiopathic Hypochromic Anaemia in Young Adult Males. P. H. Shorthouse and R. C. King.—p. 256.
Oral Hexamethonium Bromide in Essential Hypertension. W. A. Mackey and G. B. Shaw.—p. 259.
Clinical Study of Early Post-Gastrectomy Syndrome. W. M. Capper and T. J. Butler.—p. 265.
Phage-Typing and Epidemiology of Shigella Dysenteriae Sonne. K. E. Cooper and A. Mayr-Harting.—p. 271.
Aureomycin and Chloramphenicol in Infantile Diarrhoea. R. A. Shanks.—p. 272.
Phaeochromocytoma Presenting as Abdominal Emergency. I. C. Gilliland and O. Daniel.—p. 275.
Hepatic Coma with Recovery in Cystinuric. E. D. H. Cowen.—p. 277.

Chirurg, Heidelberg

22:337-384 (Aug.) 1951. **Partial Index**

Investigations on the Pulmono-Pleural Marginal Layer in Extrapleural Decortication. W. Wachsmuth and R. Schautz.—p. 337.
Measurement of Blood Perfusion in Tubed Pedicles for Plastic Surgery by Means of Radioactive Sodium. O. Eichler, F. Linder and K. Schmeiser.—p. 340.
*Implantation of Pituitary to Counteract Severe Pain in Inoperable Carcinomas. H. Gumrich.—p. 341.
Problem of Pubertas Praecox. H. Seyfarth.—p. 347.
Retrograde Intestinal Invagination Into Stomach. J. Ulrichs.—p. 350.

Hypophysial Implantation in Inoperable Carcinoma.—In the course of nearly two years calf pituitaries have been implanted in 118 patients who had chronic diseases producing severe pain. Implantation must be done within 30 minutes after the calf has been killed, and the head of the animal should be kept warm during the time required to remove the pituitary. In some instances, no excretion of prolan (the gonadotropic principle) could be ascertained following the implantation of pituitaries of animals that had been dead for about one hour. This would imply that the implant had been ineffective. Implantation is done under the fascia of the rectus. This report concerns patients in whom the pituitary implantation was done for severe pains resulting from metastasizing carcinomas. Nine of 49 died early, and in three others the implanted pituitary festered out. Of the other 37 patients, 33 remained free from pain until they died or are still free from pain, including patients with carcinoma of stomach, rectum, bronchus, nasopharynx, breast, and prostate, and with Hodgkin's disease. One implant remains effective for up to three months. A new implantation had the same effect. The pain not only subsided following hypophysial implantation, but the patients felt that they were recovering. Appetite and weight improved, and, in some cases, life seemed to be prolonged. When the implant became ineffective, a rapid decline set in and death followed. In four cases further dissemination of the neoplasm was arrested. Pituitary implantation should be done in all cases of inoperable carcinoma, also in all patients who receive irradiation for carcinoma, so as to provide more

time for irradiation. The implantation should be repeated after 10 or 12 weeks to avoid a sudden decline. The observation by Spies and Stone that freedom from pain was achieved temporarily following injection of corticotropin in 9 of 10 patients with malignant lesions is regarded by the author as corroboration of the efficacy of pituitary implants.

Deutsche Zeitschrift für Nervenheilkunde, Heidelberg

166:91-176 (No. 2) 1951. **Partial Index**

*Preferential Location, Age and Sex in Brain Tumors: Unexplained Forms of Pathoclisis. K. J. Zülch.—p. 91.
Clinicopathological Investigations in Diffuse Sclerosis with Schizophrenia-Like Symptoms. R. Frowein and W. Krücke.—p. 103.
Clinical Aspects of Myelopathia Necroticans. R. Klaue.—p. 137.

Location, Age, and Sex in Brain Tumors.—According to Zülch, it is generally recognized that the different types of neoplasms that develop in the brain and spinal cord are not indiscriminately distributed over the entire central nervous system, but show preferences for certain locations. In addition, certain types of tumor have their peak incidence in certain age groups. Thus all periods of life have their characteristic types of neoplasms, which show a predilection for certain parts of the brain. Furthermore, the incidence of occurrence of the various types of brain tumors differs by sex. This tendency of brain tumors can be designated as a "pathoclisis" of the sexes to tumor growth in definite locations and in certain age periods. The author demonstrates in diagrams the results of an analysis of 3,000 brain tumors and points out that, although the causes of this phenomenon have not been explained, the recognition of this pathoclisis of brain tumors may be an important diagnostic aid.

Doc. Neerland. et Indon. de Morbis Trop., Amsterdam

3:97-192 (No. 2) 1951. **Partial Index**

Changes of Myenteric Plexus in Pellagra. W. E. F. Winckel.—p. 100.
Repellent Effect of Insecticides, Especially of Contact Insecticides. P. H. Van Thiel.—p. 117.
*Individual Immunity Against Smallpox. W. A. Collier.—p. 163.
Hypersplenism in Patients Infected with Schistosoma Mansoni. A. le Poole.—p. 181.

Immunity Against Smallpox.—Collier feels that Indonesia exemplifies the effectiveness of compulsory vaccination. All infants used to be vaccinated in the first months of life, and the whole population was revaccinated systematically every 7 to 10 years. Although smallpox was seldom absent in neighboring countries, the disease had almost disappeared in Indonesia in the years immediately preceding World War II. Vaccinations were stopped in Indonesia in 1942. In 1948, a severe epidemic of smallpox appeared in Sumatra, which spread over to Java. Conditions were ripe for severe and extensive outbreaks: numerous children had never been vaccinated, and many adults had lost previous immunity. The author discusses the importance of mass and individual immunity. He and his collaborators in 1949 presented the results of studies on 3,000 serums. The highest titer of antihemagglutinins was found in the first and second months, after which there was a slight decrease. One to two years after revaccination no antihemagglutinins were found in 30% of those examined. After three years or longer they had disappeared in 64 out of 79 persons. It is important that several persons had no antihemagglutinins even shortly after vaccination. Some of these nonreactors were revaccinated repeatedly, in one week antihemagglutinins developed after the third revaccination, but not in others. Antihemagglutinins against vaccine apparently did not develop in this small group of persons, notwithstanding positive cutaneous reaction. The author feels that this is no argument against vaccination; on the contrary, he feels that it indicates that vaccination should be carried out even more intensively and systematically in the case of imminent danger of smallpox. In such an event the population should be revaccinated at least once a year, and those who are especially exposed to infection (e. g., physicians and nurses) every six months. In international travel, revaccination should be regarded as valid for not longer than one year.

Journal de Médecine de Lyon

32:749-790 (Aug. 20) 1951. **Partial Index**

Epidemiological Observations on Schottmüller's Disease (Paratyphoid B) in the Netherlands During 1950. G. D. Hemmes.—p. 749.
*Symptomatologic Value of Sugar Content of Cerebrospinal Fluid in Course of Tuberculous Meningitis in Adults. P. Sédallian, R. Maral, C. Exbrayat and others.—p. 755.

Sugar Content of Cerebrospinal Fluid in Tuberculous Meningitis.—The diagnostic and prognostic value of the sugar content of the cerebrospinal fluid was studied in 21 adult or adolescent patients with tuberculous meningitis. Twelve of these patients were in the initial stage of isolated acute lymphocytic meningitis, four had pulmonary tuberculosis with an associated meningitic syndrome, one adolescent had a serous tuberculous meningitis of the type described by Lincoln, and four had neurological symptoms. A low sugar content of the cerebrospinal fluid (less than 0.04 gm. per 100 cc.) was observed early enough to be of diagnostic value most frequently in the patients with isolated acute lymphocytic meningitis. By contrast it was not observed in any of 23 patients with nontuberculous lymphocytic meningitis. Consequently, in this group of patients, a low sugar content of the cerebrospinal fluid proved to be of definite diagnostic value. On the contrary, the same sign proved of no value, because of its late appearance, in patients with tuberculosis of other parts of the body associated with tuberculous meningitis, and particularly in patients with miliary tuberculosis. The sugar content of the cerebrospinal fluid also remained normal at the onset of tuberculous meningitis in patients in whom it was associated initially with neurological symptoms. From the prognostic point of view an initial extremely low sugar content of the cerebrospinal fluid may in general be an indication of the gravity of the condition. Return of the sugar content of the cerebrospinal fluid to normal within the first three to five months of treatment may provide a useful indication for the conduct of the intraspinal treatment. On the other hand, a persistently low cerebrospinal sugar level, even as an isolated sign, should caution against too early a discontinuation of the intraspinal treatment. Although a return to normal of the sugar content of the cerebrospinal fluid is an indispensable indication of recovery of the patient, it is not sufficient alone to justify complete discontinuation of streptomycin.

V 14
1951

Lancet, London

2:183-228 (Aug. 4) 1951

*Haemophilus Influenzae Meningitis Treated with Polymyxin. P. N. Swift and S. R. M. Bushby.—p. 183.
Faecal Excretion of Amino-Acids in Infants. C. A. C. Ross.—p. 190.
Unusual Reaction to Procaine Penicillin in Aqueous Suspension. R. C. L. Batchelor, G. O. Horne and H. L. Rogerson.—p. 195.
Infestation of Human Brain with Coeiurus Cerebralis: Report of Three Cases. B. J. P. Becker and S. Jacobson.—p. 198.
Acute Infectious Lymphocytosis in Adults Treated with Aureomycin. S. L. Malhorta.—p. 202.
Renal Haemodynamics in Primary Polycythaemia. H. E. de Wardener, R. R. McSwiney and B. E. Miles.—p. 204.
Toxic Effects of Diaminodiphenylsulphone in Treatment of Leprosy. E. J. Allday and J. Barnes.—p. 205.
Treatment of Habitual Abortion. D. C. A. Bevis.—p. 207.

Hemophilus Influenzae Meningitis.—Polymyxin was at first not used for influenzal meningitis, because it did not pass the blood-brain barrier, but when animal experiments had shown that it could be safely injected intrathecally, it was decided to give the drug a clinical trial. A satisfactory response was obtained in eight patients treated intrathecally and intramuscularly with polymyxin B (one case) or polymyxin E (seven cases). Among the eight patients treated, one eventually died from an intercurrent infection; the rest recovered rapidly and completely. In five patients the cerebrospinal fluid was sterile within 24 hours, in two cases within 48 hours, and in one within four days. The sugar content of the cerebrospinal fluid returned to normal and the leukocytosis was reduced usually within 24 hours, in none later than 48 hours after start of treatment. Pyrexia began to diminish in from one to eight days. No relapse occurred. High concentrations of polymyxin were maintained in the cerebrospinal fluid in the early stages of treatment by administration of two injections a day, although moderate concentrations can be maintained for 24 hours with a single dose of 40,000 units.

Once the cerebrospinal fluid was sterile, single daily doses were found adequate. The optimum duration of intrathecal treatment has not been determined. In two patients it was stopped after seven days, and in one case the dosage was reduced to 20,000 units after the fifth day.

Medical Journal of Australia, Sydney

1:889-924 (June 23) 1951

The Physician and His Workshop. C. G. McDonald.—p. 889.
Tuberculosis of Liver: Including Report of Five Cases. D. G. Neill. —p. 893.
Intravenous Therapy in Surgery: Review. D. H. Cohen.—p. 902.
Dicoumarol in Treatment of Coronary Occlusion. R. Whishaw.—p. 907.

1:925-960 (June 30) 1951. **Partial Index**

*Unexpected Death in Infants and Young Children: Second Series. K. M. Bowden and E. L. French.—p. 925.
Observations upon Effects of "Dibenamine" in Man, with Special Reference to Its Adrenolytic and Noradrenolytic Action. A. J. Barnett. —p. 939.
Clinical Description of Disease Resembling Poliomyelitis, Seen in Adelaide, 1949-1951. R. A. A. Pellew.—p. 944.

Unexpected Death in Infants.—In a former study of deaths in infancy one of the authors strongly favored the view that babies alleged to have suffocated accidentally in bed had probably died from undiscovered natural disease. It was demonstrated that, in the absence of gross pathological findings post mortem, histopathological studies showed that many of these infants had acute infections of various types. The present study describes the post-mortem observations in 43 children who died suddenly, in many of whom death by suffocation in bed was suspected. In addition to macroscopic and microscopic examination, systematic cultural studies were made in 22 of the cases. These included attempts to isolate influenza virus from respiratory tissues. A combination of methods established an "adequate" cause for death of infective nature in 14. In these there could be no question of accidental death from suffocation. There was a group of 20 cases in which histological evidence of respiratory tract infection could be found, but in which the etiological agent was not isolated. Only two cases of proved meningococcic infection were discovered, but seven showed features strongly suggestive of acute meningococcic infection, but with negative cultures; from two of these, influenza virus was isolated. The seasonal incidence of these unexpected deaths suggests that respiratory infection or some related factor is an important causative agent. This fact is borne out by the following facts: 1. There is a well-marked peak of these deaths in the (Australian) winter months April to July. 2. In many of the cases careful inquiry revealed histories of mild respiratory infections for a few days previously, or associated infections in the family. 3. Histological evidence of tracheobronchitis and acute bronchitis is extremely common (29 cases). 4. Otitis media was found in seven cases.

Minerva Chirurgica, Turin

6:241-278 (May 15) 1951. **Partial Index**

Social Aspects of Varices and Their Complications. M. Mairano.—p. 242.
Question of Surgical Treatment Combined with Sclerosing Treatment or Sclerosing Treatment Alone in Therapy of Varices. M. Mairano. —p. 244.
*Surgical Interruption of Popliteal Vein in Postphlebitic Syndrome of Lower Extremities: Indications and Results. R. Castagna.—p. 258.

Ligation of Popliteal Vein.—Ligation of the popliteal vein was performed in 20 patients with postphlebitic syndrome. Disabling manifestations preoperatively consisted of pain in 15 cases, ulceration in 18, cellulitis in 12, mild edema in 4, moderate edema in 12, and severe edema in 4. Within 10 days after the surgical intervention, Thiersch skin grafts were applied in six patients with extensive ulceration to hasten their healing. The postoperative course was highly satisfactory in all patients, who were out of bed three or four days after the operation; the average period of time required for recovery was 12 days. Follow-up examinations one month after the operation showed a pronounced improvement in all cases. Moderate pain was present in only one patient; ulceration, showing definite progress in epithelization, was observed in only four patients; and moderate cellulitis was observed in three, mild edema in four, moderate edema in four, and severe edema in two. Follow-up examination three months after the operation revealed continued improvement with complete healing of ulceration, persistent mild cellulitis in three patients, and edema in six patients, being pronounced in only one. The author encourages a wider adoption of this intervention in patients who, because of a previous phlebitic process, are suffering from incompetence of the valves of the deep veins inducing an alteration of the hydrodynamics of the venous circulation.

Prensa Médica Argentina, Buenos Aires

38:1861-1926 (July 27) 1951. **Partial Index**

*New Anatomic, Physiopathological and Neurosurgical Conceptions in Relation to Antalgic Prefrontal Lobotomy. A. Givré and H. Fracassi. —p. 1861.

New Conception on Mechanism of Effect of Prefrontal Lobotomy in Pain.—Givré and Fracassi's theory is based on the results of physiopathological, neurosurgical, and anatomic observations. The authors believe that control of pain after prefrontal lobotomy is due to interruption of intracerebral association fibers in a parietofrontal fasciculus that has not been previously described. They demonstrate this fasciculus by photographs of anatomic specimens and explain its functions with diagrams. It originates in the second parietal convolution (the center of gnosia) and extends to the prefrontal cortex above the superior longitudinal fasciculus, but is entirely independent of the prefrontal cortex. It is about 80 mm. long, and is very thick at its central portion, which is 30 mm. from the cerebral surface and can be touched by a stilet introduced horizontally 17 mm. above the upper border of the Sylvian fissure. The region incised in antalgic unilateral lobotomy corresponds exactly to the location of this fasciculus. In explaining their theory, the authors said that the peripheral sensory impulses of pain, in a normal person, travel through the lateral spinothalamic tract to the thalamus and from there to the parietal convolutions and the prefrontal convolutions through the parietofrontal fasciculus. Section of this bundle in antalgic unilateral lobotomy interrupts conduction of painful stimuli between the parietal and prefrontal zones. Interruption of the association fibers in the bundle results in separation of the sensory and emotional phases of pain with parietal preservation of sensory impulses but with none of the prefrontal emotional character of pain.

Proceedings of Royal Society of Medicine, London

44:527-636 (July) 1951. **Partial Index**

Fibrous Dysplasia of Bone and Comparable Conditions in Jaws. F. L. Ingram.—p. 549.
Pathology and Surgical Treatment of Bell's Palsy. T. Cawthorne.—p. 565.
Birthmarks and Moles. D. N. Matthews.—p. 609.
Neo-Natal Intestinal Obstruction. D. Browne.—p. 623.

Rev. Asociación Médica Argentina, Buenos Aires

65:173-222 (April-May) 1951. **Partial Index**

Protection of Liver and Kidneys Through Dietetic Factors. C. H. Best. —p. 174.
*Brucellosis and Aureomycin. C. A. Videla.—p. 181.
Lumbago in Industry. J. M. Del Sel.—p. 186.
*Marfan's Disease. F. S. Páez Allende.—p. 189.

Brucellosis and Aureomycin.—Videla reports on 10 patients with brucellosis treated at the Clinic for Infectious Diseases in Buenos Aires with aureomycin in combination with other drugs. All patients showed positive melitin skin reactions and negative blood cultures. Duration of the disease previous to treatment was 35 days to one year. The disease was in the acute stage in all of the patients, and all had had one attack. The clinical symptoms and the course of the disease suggested that the etiological factor was Brucella abortus. There were chills, fever, profuse sweating, muscular, abdominal and back pain, headache, anorexia, loss of weight, and enlarged spleen and lymph nodes, and in one of the patients, transient meningoencephalitis. While the disease was in the febrile and painful stage, therapy consisted of high protein and high carbohydrate diet, liver extracts, vitamins, blood transfusions, and intravenous injection of 10 cc. of a 10% calcium chloride solution for 10 to 20 days, to stimulate the reticuloendothelial system, to cause shrinkage of

the spleen, and to favor the production of brucellar antigen. Aureomycin was then given by mouth in increasing daily doses, varying from 2 to 4 gm. divided into fractional doses of 250 mg., up to a total dose of 24 to 56.15 gm. within 15 to 21 days. Fever disappeared within 48 to 72 hours after institution of therapy. Aureomycin was combined with paraaminosalicylic acid in some instances because of its anti-infectious and analgesic effect. Vaccine was given in increasing doses from ¼ to ½ cc. every other day intramuscularly, to accelerate desensitization. Aureomycin was also combined with sulfadiazine (96 to 136 gm., total doses) in some cases. Aureomycin therapy prevents or quickly suppresses relapses. It should be administered in large doses (3 to 4 gm. within 24 hours), so as to produce high concentration in the blood. Treatment should last 21 days. The patients observed cannot be considered definitely cured, since only 3 to 11 months have elapsed since discontinuation of the therapy without relapses, instead of the required five years.

Marfan's Disease.—Familial arachnodactyly was observed in a mother, 50, and her two children, 15 and 22. They had dislocation of both lenses and had a similar habitus. The mother was stout, and all three were very tall. The boy and girl looked 10 years over their age. Roentgenograms of the hands revealed a marked elongation of the fingers, with long, thin bones. Roentgenologic examination of the skull showed the sella turcica to be of comparatively normal dimensions. No endocranial tumors were detected. Roentgenograms of the stomach with contrast medium showed gastroptosis in all three patients. They all had a high palate, long teeth, and scapula alata. The ocular manifestations were a downward dislocation of the lenses in the mother and upward dislocation in the children. Ocular tension, fields of vision, and fundi were normal. Myopia was present in the zone of the pupil containing the lens and hyperopia in the zone from which the lens had been dislocated. Additional symptoms in the mother were divergent strabismus, rigid mydriasis of the left eye with slight ptosis of the left upper lid, iris anisochromia, iridodonesis, and degenerative opacity of left cornea. The children had a narrow, oblique palpebral fissure. The author discusses diagnosis and the differential diagnosis from acromegaly and Cushing's disease, the pathogenesis and treatment. Four brothers of the mother are reported also to have arachnodactyly and impaired vision. They were not observed.

Revista de Med. e Cir. de São Paulo

11:273-322 (June) 1951. **Partial Index**

*Concomitance of Duodenal Ulcer and Headache: Importance for Treatment. J. Fernandes Pontes.—p. 273.
Anomaly of Right Inferior Laryngeal Nerve. W. Fry and V. Pereira.—p. 303.

Concomitance of Duodenal Ulcer and Headache.—Fernandes Pontes observed that coexistence of duodenal ulcer and headache is frequent and that clinical treatment and gastrectomy fail in patients having these two disorders. In a group of 186 men and women with a clinical and roentgen diagnosis of duodenal ulcer, observed by the author, 18 patients (9.7%) had headache of long duration. It appeared long before the clinical symptoms and roentgen signs of duodenal ulcer. The patients eliminated blood in the feces two or three times a year. The predominant symptoms were those of ulcer. They increased with the Sippy diet. The diagnosis of duodenal ulcer was confirmed in all cases by the results of the roentgen examination of the gastrointestinal tract. The classic treatment failed. There were no indications for surgery, as there were no roentgen signs of organic stenosis, perivisceritis, intractable ulcer, hemorrhage, or perforation. Allergy to milk was found in 13 patients and to chocolate in 12. Other allergenic food and fruits were beans, bananas, eggs, cabbage, cauliflower, and garlic. In one patient with allergy to milk, the roentgen examination of the gastrointestinal tract, after failure of the treatment, showed a normal duodenum and normal time of emptying of the stomach. When the examination was repeated, after ingestion of milk, the time of emptying of the stomach was greatly delayed. The classic treatment and proper diet for duodenal ulcer were continued, but the allergenic food was eliminated from the diet. In all cases the symptoms of duodenal ulcer, headache, and occult blood in the feces rapidly disappeared. The niche either disappeared or showed the common roentgen aspect of cured ulcer. The satisfactory results have lasted up to the time of writing, three and four and one-half years after start of the treatment. The author points out the importance of this type of allergic disease of the duodenum, which he feels is the cause of duodenal ulcer. The differential diagnosis is of value for proper treatment.

Riforma Medica, Naples

65:597-624 (June 2) 1951

Roentgenologic Aspects of Stenosis of Aortic Isthmus: Critical Study. G. Di Chiro.—p. 597.
Modification of Gastric and Pancreatic Function Following Experimental Opening of Surface of Remaining Portion of Head of Pancreas into Stomach. A. Privitera and V. Moscato.—p. 600.
*Local Application of 40% Aqueous Solution of Paraaminosalicylic Acid (PAS) as Final Therapy of Tuberculous Cavities of Lung Subjected to Intracavitary Suction Drainage. M. Gemmi.—p. 603.

Intracavitary Administration of Paraaminosalicylic Acid in Pulmonary Tuberculosis.—A combination of Monaldi's drainage and intracavitary lavage with an aqueous solution of paraaminosalicylic acid was used in the treatment of 42 patients with pulmonary tuberculosis. In the first phase of treatment Monaldi's drainage was employed for one to two months in an attempt to reduce the cavity by about one-third. The second phase consisted of five to six intracavitary lavages with 1.5 to 2 cc. of a 20% aqueous solution of paraaminosalicylic acid daily or every second day for two to three months. The third phase consisted of instillation of 1 to 2 cc. of a 40% aqueous solution of paraaminosalicylic acid daily into the cavity for 60 days or every second day for three months. Repeated tomographic and roentgenologic studies with the use of contrast medium are required during the second and third phase of treatment. The fourth and last phase consisted of oral administration of small doses of 6 to 8 gm. of paraaminosalicylic acid daily for an additional three to four months. Of the 42 patients, 23 made a complete recovery and 8 were well for more than 30 months, 9 for more than 24, and 6 for more than 18. Of 11 patients who are still undergoing treatment, obliteration of the cavity has been obtained in 7, while lavage with paraaminosalicylic acid had to be repeated in 4. Eight patients were therapeutic failures. Roentgenographic examination at the termination of the treatment revealed recovery by cicatrization. The good results obtained encourage wider use of paraaminosalicylic acid in treatment of cavitary pulmonary tuberculosis, but this treatment is not a substitute for a thorocoplasty, which retains its great value as a preparatory or supplementary treatment to Monaldi's drainage.

65:681-708 (June 23) 1951

*Tissue Implantation as Therapy in Some Surgical Diseases. F. P. Tinozzi, G. Arpesella and L. Pasquali.—p. 681.
Febrile Reactions as Undesirable Effect of Administration of Chloramphenicol. C. A. Buttaro and E. Mezzetti-Panozzi.—p. 683.
Massive Cyst Formed by Echinococcus Simulating Cystoma of the Ovary. G. Scebba.—p. 685.

Tissue Implantation in Surgical Diseases.—The authors report on 72 patients with various surgical diseases who were treated with implanted tissue grafts according to Filatov's method. The grafts, prepared from placental and amniotic tissues, were preserved for eight days at 4 C and then autoclaved at 120 C. In many instances, tissue extracts prepared by the authors or commercial extracts were employed to supplement the effects obtained with the grafts. Of 44 patients with rheumatoid arthritis who submitted to this treatment, 19 were cured and 17 showed pronounced improvement; results were doubtful in 5 patients, and 3 were therapeutic failures. Of six patients with endarteritis of the lower extremities, one was cured, two improved, and three were therapeutic failures. Of 12 patients with fractures of the tibia, the fibula, and the femoral neck associated with deficiency or lack of callus, union occurred in 4, 6 were improved, and 2 were therapeutic failures. Of 10 additional patients with diseases of various types, 5 were cured, and 3 improved, results were doubtful in 1, and 1 remained unchanged. Best results were obtained in cases of chronic disease of the joints. Some of these patients were improved 24 hours after the implantation of the placental grafts. Satisfactory results were also obtained in cases of arteritis, particularly in the pregangrenous phase. Relief of pain was obtained rapidly. Untoward reactions were not ob-

V 14
1951

served. Euphoria was noted in all patients. Although the follow-up period is still too short to permit definite evaluation, tissue implantation therapy presents encouraging aspects, especially for some diseases in which all types of treatment have failed. The authors caution against excessive optimism, but they believe that the new therapy and its working mechanism opens a wide field for biologic and chemical research.

Sang, Paris

22:525-612 (No. 7) 1951

*Hereditary Methemoglobinemic Cyanosis: Autonomous, Well-Defined Disease Entity of Red Blood Corpuscles; Genetic, Clinical and Humoral Study. A. Codounis.—p. 525.
Study of Blood Groups in Persons with Mental Retardation. A. Soulairac, P. Desclaux and C. Morlon.—p. 542.
Method of Using Diluted Plasma for Study of Blood Coagulation. P. Chevallier, A. Fiehrer and I. S. Tadzer.—p. 552.
Cortisone and Blood Coagulation. P. Chevallier, A. Fiehrer and I. S. Tadzer.—p. 557.

Hereditary Methemoglobinemic Cyanosis.—Of 85 members in four generations of a family tree reported from the south of Greece (Peloponnesus) 10, between the ages of 6 and 80, had congenital cyanosis without cardiopathy, i. e., an autonomous disease entity of the erythrocytes, for which the author has coined the term "hereditary methemoglobinemic cyanosis." The results of the genetic, clinical, humoral, and therapeutic study of these patients confirmed the author's concept that in addition to the four classic types of cyanosis, i. e., those due to anoxemia, mixing of venous and arterial blood, polycythemia, and drug intoxication or enterogenous autointoxication, a fifth type is to be considered, namely, a primary and permanent, idiopathic, and congenital cyanosis, a hereditary disease of the erythrocytes, which are incapable of reducing the methemoglobin to hemoglobin. Evidence provided by the author's patients suggests that the methemoglobinemia is inherited as a recessive character and that this type of cyanosis, exactly as the congenital hemolytic disease, is transmitted predominantly to men. The cyanosis disappeared within 10 minutes after an injection of methylene blue or an injection of 300 to 500 mg. of ascorbic acid, but recurred within 10 days in those patients who did not receive a daily maintenance dose of 10 to 30 mg. of ascorbic acid by mouth. The term "hereditary methemoglobinemic cyanosis" emphasizes the three main characteristics of this anomaly of the blood, namely, cyanosis, which is the dominant clinical symptom, methemoglobinemia, which presents the pathognomonic spectrum characteristic of the disease, and its familial and congenital character. This should be preferred to any other less descriptive term, which may only cause confusion. Of a total of 92 cases of hereditary methemoglobinemic cyanosis so far listed in world literature and including the author's 10 cases, 44 were observed in Greece, but the disease occurred in all parts of the world and is not so rare as it has been assumed previously. As yet it has been studied only in persons of the white race. It seems likely that cases of the disease have not been discovered more frequently because longevity is not incompatible with it and because the persons affected do not have considerable subjective disturbances requiring medical advice. The constant presence of intracellular methemoglobin in the blood differentiates the disease from cyanosis due to anoxemia, mixing of arterial and venous blood, and polycythemia, in which there is no methemoglobinemia.

Schweizerische medizinische Wochenschrift, Basel

81:653-692 (July 14) 1951. **Partial Index**

Cancer of the Lungs. A. Brunner.—p. 653.
Anatomicopathological Report on Cancer of the Lungs. A. v. Albertini.—p. 659.
Bronchial Carcinoma and Tobacco: Causes of Cancer of the Lungs. O. Gsell.—p. 662.
*Value of Bronchial Investigation for Detection of Bronchial Cancer: Indications for Bronchoscopy. J. P. Taillens.—p. 668.

Bronchial Exploration in Bronchial Cancer.—Observations made during a yearly average of 400 to 500 bronchoscopies justify the statement that for practical purposes alveolar cancer of the lungs can be considered not to occur, and that cancer of the lungs is bronchial in its location and in its roentgenologic and clinical manifestations, and therefore requires bronchial exploration. In 80% of cases of bronchial cancer, clinical manifestations are of little help in the diagnosis, but roentgenologic examination may offer considerable aid in diagnosis and bronchoscopy may establish the diagnosis. Atypical, recurrent, or continued bronchopneumonia, the etiology of which cannot be established rapidly, bronchiectasis acquired at the age of maturity, asthma without previous history, and cough refractory to opiates are clinical and provisional diagnostic features. Their cause may be an infection of the upper respiratory tract that requires exploration of the nasal cavities, sinuses, pharynx, and larynx or of the lower respiratory tract, requiring bronchial exploration. Any shadow in the lobes or segments of the lungs and any roentgenologically demonstrable atelectatic syndrome due to bronchial obstruction establishes the bronchial etiology and makes bronchial exploration imperative. The latter should be performed by bronchography with iodized oil or, even better, "ioduron B" (the morpholine salt of 3:4 diiodo-4-pyridone-N-acetic acid, with a cellulose derivative to increase viscosity), and bronchoscopy. Frontal and lateral roentgenograms and tomography assist in the diagnosis. Bronchoscopy reveals the cancer, demonstrates its location, detects local metastasis, and reveals the endobronchial spread and the extrabronchial behavior of the neoplasm and the presence or absence of superinfection. It therefore offers aid in diagnosis, therapy, and prognosis. It is indispensable and should be performed as early as possible.

81:693-716 (July 21) 1951

Problems of Modern Anthropology. K. Saller.—p. 693.
*Virus-Scratch-Lymphadenitis (Disease Due to Cat Scratches, Lymphoreticulosis Benigna). O. Gsell, R. Forster and E. Klaus.—p. 699.
Pendiomid, New Drug Producing Ganglion Block, Employed in Urology. J. Schneider.—p. 704.
Clinical Experience with Soporific Plexonal (Sandoz). H. Binswanger.—p. 707.

Virus-Scratch-Lymphadenitis.—The occurrence of a peculiar subacute regional lymphadenitis in six boys between the ages of 6 and 15 and in four adults, two men and two women, is reported. The adenopathy involved the inguinal lymph nodes in two patients, the axillary lymph nodes in four, the axillary and inguinal lymph nodes in one, the submaxillary in one, the preauricular in one, and the cubital in one. There was rise of temperature to 102.2 F. in six patients. Abscess formation occurred in four instances. The pus aspirated from the involved nodes was bacteriologically sterile. Neutrophil leucocytosis was observed in two patients in whom an abscess occurred. Eosinophilia between 2% and 9% was observed in all patients. The blood sedimentation rate was slightly increased in 9 of the 10 patients. All the patients made a complete recovery within 3 to 12 weeks. All patients demonstrated a cutaneous reaction to a stock antigen obtained from the pus of involved lymph nodes by Mollaret in Paris; the complement fixation reaction gave a titer of 1: 10 in three of the authors' patients and a titer of 1: 20 in one. Microscopic examination of the involved lymph nodes was made in three instances; it revealed a nonspecific inflammation with pronounced proliferation of the reticulum in one, and insignificant suppurative lymphadenitis in the two others. In 9 of the 10 patients contact with cats could be demonstrated, with cat bites in two instances and with cat scraches in the area drained by the involved lymph nodes in several other instances. Diagnosis of virus-scratch-lymphadenitis was made on the basis of the specific cutaneous reaction and the complement fixation test. This disease, which has occurred recently as an epidemic in central Europe, was first described by French authors in 1950. They called it the cat scratch disease. Treatment with aureomycin (total dose 12 gm.) in two patients and with an equal dose of sulfamethazine in another patient seemed to hasten the recovery. Sulfamethazine had no favorable effect on the fever in a fourth patient, in whom temperature rapidly was restored to normal by 300,000 units of penicillin given daily for five days.

Semaine des Hôpitaux de Paris

27:2383-2442 (Aug. 2-6) 1951. **Partial Index**

*Diagnosis of Thyroid Disorders by Determination of Curve of Uptake of I^{131} by Thyroid Gland. Gilbert-Dreyfus, G. Ambrosino, M. Zara and others.—p. 2383.

*Antidiuretic Principle, the Liver and Hepatic Cirrhosis. J. Schiller, S. Lapidus and J. Huppert.—p. 2390.

Radioiodine Uptake Curves in Diagnosis of Thyroid Disorders.—Measurements of the radioiodine uptake of the thyroid gland were obtained from 140 persons, of whom 46 were normal or had various diseases not caused by abnormal thyroid function, and 94 of whom had thyroid disorders. The latter group consisted of 8 patients with severe myxedema, 27 with hyperthyroidism, 15 with simple hyperplastic goiter, 9 with hemorrhagic thyroid cysts, 2 with thyroid cancer, 8 with isolated or multiple adenoma, and 25 with simulated hyperthryroidism. Radioiodine uptake curves were obtained after the administration of tracer doses varying from 50 to 100 μc. Readings with a Geiger counter were made one and six hours after the ingestion of the tracer dose on the first day and once a day for the next four or five days. The percentage of the ingested tracer dose was recorded as the ordinate and time as the abscissa. The diagnosis was based on the form of the curve and not on the absolute values of the uptake. In normal persons the curve reached its peak within 48 hours on the average, with an uptake ratio varying from 24 to 40%. In patients with hyperthyroidism the curve reached its peak in less than 10 hours with an uptake ratio varying from 50 to 80% and with a drop to 20 to 30% within 24 hours; the curve is thus characterized by a sharp peak followed by a considerable and rapid drop. In patients with hypothyroidism the curve did not reveal any radioiodine uptake. The results obtained with this method corresponded well with the clinical picture, and, in 90% of the patients, they confirmed the basal metabolic rate. The method described is superior to that of taking a single measurement of the radioactive uptake, which, although generally used for economy, may be responsible for an erroneous diagnosis. The authors believe that there is justification for using their method as a substitute for that of basal metabolic rate determination, which is an indirect method and prone to errors.

Antidiuretic Principle.—Assay of the urine and ascitic fluid of seven patients with cirrhosis of the liver revealed considerable antidiuretic activity in six of the seven. In one patient the antidiuretic activity of the urine was high, while that of the ascitic fluid was nil, and in another patient there was no antidiuretic activity of the urine while that of the ascitic fluid was high. In these two patients with severe icterus these assays were made shortly before death, and the accentuated disturbances of the renal function and of the permeability of the tissues may have inhibited the diffusion of the antidiuretic principle. In general the most striking fact was the constant antidiuretic activity of the ascitic fluid, which, in a parallel with the increased titer of antidiuretic potency in the blood plasma and in the urine, proved the pronounced diffusibility of the antidiuretic principle in the body fluids of the cirrhotic patients. In rats the effect of commercial antidiuretic hormone was definitely more pronounced in partially hepatectomized animals than in the control animals, whose livers were intact, thus demonstrating that the liver inactivates antidiuretic hormone in the organism. It is suggested that in cirrhotic patients the impaired liver has lost its power to destroy the amounts of the hormones continually brought into circulation in order to control the water exchange. One may therefore consider using the titration of the antidiuretic activity of the urine as a liver function test in cirrhotic patients. Certain facts seem to indicate that the antidiuretic principle in the urine and in the ascitic fluid may be identical with the antidiuretic hormone excreted by the posterior pituitary. Despite the fact that this identity has not yet been demonstrated, since true identification of the antidiuretic principle in the urine and ascitic fluid of cirrhotic patients would require its chemical isolation, the authors assert that an antidiuretic substance seems to be one of the factors that determine the ascites of the cirrhotic patients.

Tubercle, London

32:163-184 (Aug.) 1951

Pulmonary Tuberculosis in Dockers (Grain-Workers). L. Dunner and R. Hardy.—p. 164.

Pyogenic Brain Abscess as Complication of Cavitated Phthisis. S. Jackson and W. Pagel.—p. 168.

'Solvoteben'—Water-Soluble Thiosemicarbazone: Report of Case of Tuberculous Infection of Extrapleural Space, Treated by Local Injections. H. Roche.—p. 170.

Ugeskrift for Laeger, Copenhagen

113:851-884 (June 28) 1951. **Partial Index**

*Treatment of Rheumatic Fever with 3-Hydroxy-2-Phenylcinchoninic Acid (HPC). M. Iversen.—p. 851.

Chronic Polyarthritis: Evaluation of Results of Treatment. N. Poulsen. —p. 857.

Remarks on Treatment of Precancerous Changes in Portio. F. Bierring. —p. 862.

Case of Fish Intoxication Resembling Histamine Intoxication. J. Christensen.—p. 863.

Treatment of Rheumatic Fever with HPC.—In the eight severe cases of rheumatic fever described, with relatively acute onset, fever, subjective and objective joint symptoms, increased sedimentation reaction and antistreptolysin titer, the rapid and pronounced effect of 3-hydroxy-2-phenylcinchoninic acid is, Iverson says, in accordance with that reported by Blanchard and his associates and by Rennie and his co-workers. In the course of from half a day to several days the patients were free from symptoms and moved their joints freely without pain, and the temperature was normal or only slightly elevated. The general condition was excellent; the sedimentation reaction decreased somewhat more slowly but in definite relation to the period of treatment. Recurrences after cessation of treatment were promptly relieved by repeated treatment.

Zeitschrift für Orthopädie, Stuttgart

81:1-208 (No. 1) 1951. **Partial Index**

*Nailing to Accelerate Healing of Aseptic Bone Necroses in Coxal End of Femur (in Coxa Vara and Perthes' Disease). P. Pitzen.—p. 7.

Rachitic Scoliosis: Results of Early Treatment. K. Lindemann.—p. 25.

*Clubfoot Caused by Impairment of Epiphyseal Growth After Implantation of Needles Containing Mesothorium into a Hemangioma. C. Mau. —p. 34.

Surgical Treatment of Köhler's Disease of Metatarsal Head. G. E. Konjetzny.—p. 41.

Results of Surgical Treatment of Pseudarthroses of Long Tubular Bones. C. Bischofberger.—p. 50.

Pathogenesis of Habitual Luxation of Shoulder. W. Dahs.—p. 58.

Vertebral Fractures During Shock Therapy. H. G. Mertens and H. Bader. —p. 80.

Bone Changes in Leukemia: Case of Subleukemic Myelosis in Child Aged 3½ Years. K. Idelberger.—p. 134.

Nailing in Coxa Vara and Perthes' Disease.—Coxa vara adolescentium and Legg-Calvé-Perthes' disease are characterized by the same pathological changes, except that the lesion differs in localization. In both cases an aseptic bone necrosis exists, which in Perthes' disease involves the capitular epiphysis and in adolescent coxa vara the metaphysis of the neck of the femur. In many patients with these disorders the author found that by driving a three-flanged nail into or near to the necrotic focus, healing could be greatly accelerated. Osteosynthesis is neither advisable nor necessary. The author suggests that the nail itself or the act of nailing may produce a stimulus to bone formation.

Clubfoot Resulting from Radium Irradiation of Epiphysis.—The child whose case is reported was normal at birth, except that the left foot showed a bluish-red discoloration. In the course of six months this hemangioma progressed until it was raised about 1 cm. above the level of the skin and covered the lower part of the leg and nearly the entire foot. At the suggestion of a radiologist and with the consent of the parents, platinum needles containing mesothorium were introduced on four successive days into different portions of the hemangioma. Two ulcerations, the size of a quarter, developed following the irradiation and required more than five months to heal. Whereas originally both feet had been in a normal position, six months after the implantation of mesothorium an increasing clubfoot position of the left foot became evident caused by inhibition of growth in the lower tibial epiphysis.

V 14
1951

BOOK REVIEWS

The Physiology of the Newborn Infant. By Clement A. Smith, M.D., Associate Professor of Pediatrics, Boston Lying-in-Hospital, Harvard Medical School, Boston. Second edition. Cloth. $7.50. Pp. 348, with 44 illustrations. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1951.

This edition of Dr. Smith's book will maintain the preeminence of the first, as the outstanding work on the physiology of the fetus, the premature infant, and the full-term newborn infant. The most completely covered chapters are those on respiration, circulation, digestive tract, nutrition, and hematology. The discussion on institution of respiration and readjustment to postnatal circulation are most interesting. There are also excellent chapters on metabolism, minerals, and vitamins, regulation of water and electrolytes, endocrinology, and immunology. The latest theories concerning these subjects are incorporated in the text.

The clinical summaries at the end of each chapter contain pertinent data relative to the subject matter covered. The 44 figures and 49 tables are easy to interpret and facilitate comprehension of the more complex technical material. The bibliographies are complete. A table of normal laboratory values during the first two weeks of life is located on the final pages and will be an invaluable reference.

Because of the highly technical aspect of most of the subjects discussed, this book is not like the usual medical textbook, for it deals mainly with basic sciences. The book should be in the library of every pediatrician, particularly those who deal with many premature or full-term newborn infants. This book is an excellent reference concerning both normal and abnormal conditions in the neonatal period and should be invaluable in the medical school curriculum.

Industrial Oil and Fat Products. By Alton E. Bailey, Director of Research, Humko Company, Memphis, Tennessee. Fats and Oils: Series of Monographs on Chemistry and Technology of Fats, Oils, and Related Substances. Editorial board: A. E. Bailey, et al. Second edition. Cloth. $15. Pp. 967, with 164 illustrations. Interscience Publishers, Inc., 250 Fifth Ave., New York 1; 2a Southampton Row, London, W.C.1, 1951.

An enormous amount of information has been collected here on the technology of oils and fats used for foods and in the manufacture of foods, soaps, coatings, and lubricants. Composition and properties of fats and oils, raw materials used in their manufacture, industrial utilization, and unit processes in oil and fat technology are the four sections into which the work is divided. The book is well arranged, illustrated, indexed and printed, and the bibliographies are extensive. However, the general practitioner will find the treatment of the biochemistry of fats and the role of fats in human nutrition extremely sketchy.

Le médecin face au malade. Par E. Biancani. Préface de Serge Oberlin, président du Conseil national de l'Ordre des médecins. Paper. 300 francs. Pp. 119. L'Expansion scientifique française, 23 rue du Cherche Midi, Paris, 6e, 1951.

The small book presents a rather extensive discussion of the ethics of doctor-patient relationship. The author describes types of doctors and types of patients. He then discusses what he considers to be the proper attitude of the physician toward the patient and stresses what would be called in the United States psychosomatic medicine. Above all, the little book is an exhortation reminding the young physician of his duty to the patient and to his community. The book offers little that has not been already said on occasions of graduation to medical students and on similar occasions. It is interesting, however, in that it emphasizes the role of a physician in private practice as opposed to the physician in socialized medicine.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Practical Clinical Psychiatry. By Edward A. Strecker, A.M., Sc.D., M.D., Professor of Psychiatry, School of Medicine, University of Pennsylvania, Philadelphia, Franklin G. Ebaugh, A.B., M.D., Professor of Psychiatry, University of Colorado, Boulder, and Jack R. Ewalt, M.D., Professor of Neuro-Psychiatry, University of Texas Medical Branch, Galveston. Section on Psychopathologic Problems of Childhood by Leo Kanner, M.D., Associate Professor of Psychiatry, Johns Hopkins University School of Medicine, Baltimore. Seventh edition. Cloth. $7. Pp. 506, with 35 illustrations. Blakiston Company (division of Doubleday & Company, Inc.), 1012 Walnut St., Philadelphia 5, 1951.

Because of the stated shortage of properly trained psychiatrists in the country today, the authors have made a special effort in this edition, to present material that is of value not only to psychiatrists but to medical students and physicians in general practice, who they feel will continue to treat the greatest majority of patients suffering from psychoneurotic and psychosomatic disorders. For this purpose a new section, containing much new material on "support therapy," has been added in this edition.

Another feature is the inclusion of a chapter on the psychopathology of childhood. This chapter considers the many opportunities that are presented to physicians in general practice, particularly physicians who treat families, to enter into prevention of mental illness, so much of which is believed to have its genesis during childhood. A framework for the proper development of mentally hygenic childhood is given in detail.

Phantom Limbs in Amputees: A Study of Changes in the Integration of Centripetal Impulses with Special Reference to Referred Sensations. By Börje Cronholm. Acta psychiatrica et neurologica scandinavica supplementum 72. Translated from Swedish by Francina Cameron. Paper. Pp. 310, with 40 illustrations by Hikka Bjerner. Ivar Haeggströms Boktryckeri A.B., Stockholm, 1951.

Cronholm reports the results of a study of 122 patients with amputations at or proximal to the wrist or ankle. He describes the sensations of the patients with "phantom limbs" and analyzes the conditions predisposing the amputee to such experiences. For instance, on page 62 he gives the data showing that this experience is more frequent in patients undergoing amputations late in life and also gives the statistical evidence that this difference between old and young is significant.

Prospective readers will save themselves much annoyance by memorizing the 10 abbreviations given on page 14, which are unfortunately used throughout the preceding seven pages of the table of contents, as well as throughout the remainder of the text. Of some practical interest are Chapters 37 to 41 on the behavior of the phantom limb when the patient is wearing a prosthesis, and on page 220 two cases are mentioned in which the patient occasionally seemed to identify the phantom with the prosthesis, or felt as if they occupied the same position in space. In the light of his facts, the author discusses the neurophysiological interpretation of this phenomenon, he summarizes his conclusions on pages 250 to 253. The book will be of interest to all who are concerned in the rehabilitation of amputees. The translation into English has been extremely well done.

Gynecologic Cancer. By James A. Corscaden, Ph.B., M.D., Attending Gynecologist, Sloane Hospital for Women, New York. Cloth. $6. Pp. 368, with 110 illustrations. Thos. Nelson & Sons, 19 E. 47th St., New York 17; Parkside Works, Dalkeith Road, Edinburgh 9, 1951.

The author justifiably points out the ready accessibility to diagnosis and surgical attack of most gynecologic cancers. He indicates his preference for a definition of "cure" as "freedom from subjective or objective evidence from cancer after an interval of five years." To the author, 10 years seems too long for the practical purpose of assaying treatment in patients of the cancer age. Therefore, all "cure" rates mentioned in the text are calculated on the basis of five years of survival without symptoms or signs. The choice of the word "cure" seems unfortunate, since most authorities prefer the term "survival" because of the wide variations in individual response of patients and tumors. Otherwise, the text is excellently conceived, well written, and well illustrated.

Endocrinología. Por el Dr. Rodolfo Q. Pasqualini, profesor adjunto de clínica médica [Buenos Aires]. Paper. Pp. 674, with illustrations. Librería y editorial "El Atenco," Florida 344—Cordoba 2099, Buenos Aires, 1951.

Those who can read Spanish will find this a compact book on the syndromes due to disturbances of the endocrine system, with an extensive but concise description of all the pathological syndromes that are considered in the differential diagnosis of each clinical entity. The book achieves its purpose by giving concisely a complete description of the clinical entities, the treatment and differential diagnosis. This enables the busy practitioner who wishes to refresh his memory with some forgotten aspects of a particular syndrome. It is of equal benefit to the student who does not have the time to go through a larger and more complicated textbook. Because of the compactness of description of all syndromes and the treatment, it should contain an extensive bibliography, so that the reader who is interested in more details could find them in the references.

The 35 chapters are well divided, the first one giving a short anatomic description of all the endocrine glands. Then there are several chapters on the hormones, its uses and physiological effects. The rest of the chapters are on syndromes.

At the end of the book there is a pharmaceutical résumé of all the drugs available for endocrine uses with forms of administration and doses. The alphabetical index is complete. There is no bibliography.

A Study in Alcoholism: Clinical, Social-Psychiatric and Genetic Investigations. By Curt Åmark. Acta psychiatrica et neurologica scandinavica supplementum 70. Translated by Donald Burton. Paper. Pp. 283, with 6 illustrations. Ejnar Munksgaards Forlag, Nørregade 6, Copenhagen, K, 1951.

This is a report of a genetic and psychosocial study of 643 alcohol addicts as to the cause or causes of alcohol addiction. Chapter 1 deals with past research and theories as to the causes of alcohol addiction. Chapter 2 presents a survey of the prevalence of this affliction in Sweden and what is now being done for its control and prevention. The rest of the volume deals with the methods of research, and the results of the research. The author concludes: 1. Mental disorders in parents and siblings of alcohol addicts are no greater than in random sampling of the general population. 2. The intellectual development in the alcohol addicts does not differ from that of similar age groups of the general population. 3. Unfavorable environmental conditions during the growing years are more commonly found among alcoholics than in the general population.

Healthy Babies: A Complete Handbook for Modern Mothers. By Josephine Hemenway Kenyon, M.D., and Ruth Kenyon Russell, M.D. Fifth edition. Cloth. $3. Pp. 317. Atlantic-Little, Brown & Company, 34 Beacon St., Boston 6, 1951.

Appreciably expanded, this revised fifth edition of a volume that has attained merited popularity is a desirable aid to physicians although it is directed specifically to mothers. There is much clarification of problems that beset anxious parents, especially those with first-born infants.

New material includes a reassuring chapter on children whom the parents may think are not "normal." It should help ease the burden sometimes placed on physicians in this connection and make understanding less difficult. Discussion of the benefits of breast feeding has been expanded, as has the material on premature infants and their care. In a special chapter on communicable diseases of childhood, 23 conditions are considered in a tabular arrangement. If one were to quibble it might be over inclusion of conditions such as malaria, spotted fever, and typhoid-paratyphoid. A variety of other abnormalities, ranging from clubfoot through harelip to intestinal parasites, are considered in the following chapter. In still another chapter, there is much sound advice on procedures to follow in accidents or illness emergencies. On the inside front cover is a weight chart for the first year of life, with a reassuringly comfortable margin both ways. Inside the back cover is a similar chart beginning at 20 pounds and going to 45.

This volume deserves wide circulation among mothers of young children, and certainly physicians can recommend it without reservation.

Doctors by Themselves: An Anthology. [Compiled] by Edward F. Griffith. With foreword by The Rt. Hon. Lord Horder. Cloth. 21s. Pp. 614, with 64 illustrations. Cassell & Co., Ltd., 37-38 St. Andrew's Hill, London, E.C.4, 1951.

This anthology describes different aspects of the life and thought of medical men and women from the earliest practitioners of ancient times down to the present generation. Two main themes predominate throughout the book: the first is the intense interest the doctor has almost invariably shown for the welfare of his patients; the second, the long, continuous struggle to liberate himself from a magical interpretation of his art. The anthology is divided into five sections, which embrace the growth and development of medicine through the centuries, the foundations on which medicine rests, the growth of hospitals, important medicosurgical inventions and alterations in customs and techniques, accounts of the relationship between patient and doctor, the gradual conquest of various diseases, and a glimpse into the lives and habits of some of our greatest medical men. An especially interesting section deals with the doctor's contribution to the general fund of human knowledge and enjoyment.

Most of the selections are from English-speaking doctors, but the editor has also included doctors of other nationalities, either because of their close contact with England or because of their valuable contributions to medical science. Modern therapy has not received as much recognition as could have been given it. Griffith has concentrated more on the growth and development of medicine in the past than on modern medical discovery. It is hoped that he will at some future date compile an anthology selected from the writings of modern medical writers. Biographical notes give satisfactory information about the authors represented, and full particulars of each quotation are incorporated in the index of sources.

Inferiority Feelings in the Individual and the Group. By Oliver Brachfeld. [Translated from French by Marjorie Gabain.] Cloth. $4. Pp. 301. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

In this scholarly and carefully arranged volume, which the author refers to as an "inventory," there is presented the history of the development of this subject. It is pointed out that "the idea of feelings of inferiority" was in the air at the beginning of the 20th century, Adler's study on "Organic Inferiorities" in 1907 and Pelmann's work in 1910 on "mental minus-values" being important landmarks in the growth of the concept that Adler developed so extensively. A special chapter presents this in detail, as well as describing events leading to the split between Adler and Freud.

Relation of the feeling of inferiority to numerous everyday situations is considered in a series of chapters, including the family pattern, the labor complex (economic circumstances), envy, sex, art, and racial factors. Major forms of the inferiority complex, neurosis, psychosis, and crime are treated extensively, and other chapters include diagnosis of inferiority feelings, the problem of compensation, inferiority feelings in the animal kingdom, and unconscious auto-estimation. Especially helpful are the first seven chapters, which contain a detailed historical review of the subject.

Pioneer Doctor: A Biography of John Singleton. By Mary Kent Hughes. Cloth. $2.50. Pp. 163, with illustrations. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E.C.4; Melbourne, 1950.

Much more than mere medicine was practiced by the subject of this biography, Dr. John Singleton, one of Australia's pioneer physicians. In this warmly sympathetic little volume, written by Singleton's great-granddaughter, are described his successful efforts to bring about improvements in prison conditions, education, religious training, social work, and hospital and medical clinic services. In addition to tireless attention to such varied interests, he carried the heavy load of his private practice in a region where for a time he was the only physician—and he lived to the age of 83. It is fitting that this record has been presented. It fills in important general details about life in Melbourne and Australia during the latter half of the 19th century.

Dr. Singleton, born in Dublin in 1808, did not settle in Australia until he was 43, having left Ireland primarily as a result

of the great famine following the memorable potato crop failure of 1848. The first six chapters of the book deal with his boyhood, education, and family life in Dublin.

The volume provides interesting, stimulating reading. The author is also a physician.

Medical Botany: A Hand-Book for Medical Men and All Who Are Concerned in the Use of Plants: Nutritionists, Dieticians, Pharmacists and Veterinarians. By Alexander Nelson, Ph.D., D.Sc., F.R.S.E. Cloth. $6.50; 22s. 6d. Pp. 544, with 26 illustrations. [Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2]; E. & S. Livingstone, Ltd., 16 and 17 Teviot Pl., Edinburgh 1, 1951.

This book is devoted to aspects of botany of particular interest to medical men, nutritionists, dieticians, pharmacists, and veterinarians. In the first section, foodstuffs derived from plants are discussed. An introductory subsection covers general subjects such as plant structure in relation to food quality; mineral or ash constituents; vitamins; and the effects of storage, processing and cooking. In the second subsection, the characteristics of various classes of foodstuffs are described. The second section of the book deals with plant products of pharmaceutical interest, while the final section is devoted to a consideration of the role of plants in causing specific diseases and to the general principles involved in the identification of plants. While the information contained in this book is not very detailed, its wide scope presents a broad and stimulating survey of botany in relation to human and veterinary medicine.

Insect Control by Chemicals. By A. W. A. Brown, M.B.E., B.Sc.F., Ph.D., Professor and Head of Department of Zoology, University of Western Ontario, London, Canada. Cloth. $12.50. Pp. 817, with illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., London, W.C.2, 1951.

The book is an up-to-date presentation of the essential facts and theories on the chemical control of insects. The scope of the book includes the chemical and physical properties of the insecticides, their pharmacology with respect to insects, the equipment and methods for their application, as well as their toxicity and hazards to man, animals and plants. The subject matter, aided by a large number of excellent tables and figures, is comprehensively covered in a clear and interesting manner. The extensive number of references, 2,300, would have been even greater if the author had not cited in a number of instances review articles instead of the original papers. As a minor criticism it should be pointed out that the author has adopted an unusual technique in the presentation of the references. What appears to be the title of a paper frequently is a topic, phrase, or sentence relating the paper to the subject matter of the text. Since this practice is not made clear to the reader, it could result in a great deal of confusion as to the actual title of the reference. Nevertheless, the book is an outstanding contribution to the field of insect control and brings together a wealth of material that is scattered throughout the literature and is not readily available.

Pharmacology of the Failing Human Heart. By John McMichael, M.D., F.R.C.P., Professor of Medicine in University of London at Post-graduate Medical School of London, London. Publication number 92, American Lecture Series, monograph in American Lectures in Circulation. Edited by Irvine H. Page, M.D., and A. C. Corcoran, M.D. Cloth. $2. Pp. 63, with 24 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford; Ryerson Press, 299 Queen St., W., Toronto 2B, 1950.

John McMichael, professor of medicine in the University of London at the Post-Graduate School of London and a pioneer in cardiac catheterization, in this small monograph summarizes recent studies, by cardiac catheterization, on heart failure and its treatment. The assembled data are unchallenged, but their interpretations are still the subject of debate.

In the chapter on "General Ideas on Heart Failure," he discusses the differences in adaptation existing in the various types of chronic heart failure, especially in terms of cardiac output.

"The Behavior of the Failing Heart" is an account of Starling's Law of the Heart as interpreted in man from McMichael's own work. Effects of transfusion and venesection are discussed.

Chapters 3 and 4 deal with the mechanism of action and the therapeutic uses of aminophylline (theophylline ethylenediamine), digitalis, and strophanthus, based chiefly on the author's experiences with intracardiac catheterization.

In the final chapter, a summary of suggested treatment for special groups of heart failure, e. g., cor pulmonale and valvular heart disease, is given.

One may question some of the interpretations and conclusions made in this book, e. g., the role of the venous pressure mechanism in heart failure and the limitations placed by the author on the Starling concept of the Law of the Heart. A more cautious and critical phrasing in these and some other points would have contributed to a more balanced presentation. However, limitations of space are severe, and the author may perhaps be forgiven some degree of dogmatism.

The book is concisely and clearly written, is fully illustrated with graphs, and has a good bibliography. As is usual in this series, it is well published. It is recommended to everyone interested in physiology and clinical medicine. The work described certainly points the way toward clarity in problems that have too often been only vaguely and empirically understood.

Hypnoidal Psychotherapy. By Margaret Sieger, Ph.D. Foreword by Frederic Bergstrom, M.D. Cloth. $3.50. Pp. 150. Froben Press, Inc., 1776 Broadway, New York 19, 1951.

The author's methods in psychotherapy are called hypnoidal psychotherapy because they relate to the use of the hypnoidal state, which is a half-sleeping state through which all persons pass before falling soundly asleep or becoming completely awake. The hypnoidal state is considered to be closely allied to natural sleep and to be a normal mental state as compared with the hypnotic state or artificially induced sleep.

Technic is primarily aimed toward shortening otherwise extremely prolonged technics in psychiatry. The author describes briefly general technics of psychiatry, including therapy under hypnosis, and details the technic of hypnoidal psychiatry. Special attention is devoted to the use of hypnoidal psychotherapy in alcoholism.

The author was educated in Vienna, concentrating on Jungian depth psychology, and later underwent Freudian didactic analysis. A considerable part of the material used in the development of this technic is apparently elaborated from Jungian and Freudian concepts of psychology.

Simplified Nursing. By Florence Dakin, R.N., and Ella M. Thompson, B.S., R.N. Fifth edition. Cloth. $4. Pp. 730, with 78 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1951.

This fifth edition has been completely rewritten for the use of the practical nurse student. It includes information suggested as essential by the "Job Analysis" (1947) and the "Practical Nurse Curriculum" (1950) published by the United States Office of Education. All aspects of the patient and his care are dealt with, even if very briefly, so that the student is oriented to her responsibilities and relationships to the health professions. Such topics are included as personal hygiene, the anatomy and physiology of the body systems, various common diseases, nursing treatments and medication, emergency care and the physical aspects of the patient's environment. Considerable space is devoted to those phases of nursing which seem particularly adaptable to the services of the practical nurse. These include mother and baby care, home care of the chronically ill, and hospital care in mental disorders.

Throughout, the material is directed to the singular needs and contributions of the practical nurse. Emphasis is often on those phases of care which are not therapeutic, in the strict sense of the word but which contribute greatly to the mental well-being of the patient and his family.

The authors have attempted to cover a complex, broad group of subjects within the confines of one book. This limitation may be responsible for an apparently dogmatic approach in some areas. In general, the book is sufficiently accurate and comprehensive to meet the requirements of our present concept of the practical nurse and to warrant recommendation for this use.

QUERIES AND MINOR NOTES

TREATMENT OF DYSPNEA CAUSED BY EMPHYSEMA

To the Editor:—*Please let me know the modern therapy for dyspnea that accompanies pulmonary emphysema?*

M.D., New York.

Answer.—The treatment of dyspnea from emphysema depends to some extent on the cause of the emphysema. As far as possible, all exciting agents that might lead to emphysema should be searched for and, if found, removed or treated. For example, dusty occupations, wet and damp conditions that cause a chilling of bronchial mucosa, with resulting irritation from cold and moulds, and occupations that require too much effort should be eliminated. Specific bronchial asthma must also be treated to eliminate the exciting agent if possible.

As to the dyspnea itself, the treatment varies with the degree of dyspnea. Some cases may require only limitation of activity with the addition of 90 mg. of aminophylline once or twice a day. Others will respond to 2 to 3 gm. of potassium iodide under similar conditions of exercise. Sometimes 25 mg. of ephedrine will give a desirable result. Rarely, 50 mg. of meperidine hydrochloride may give temporary relief. In severer conditions it may be necessary to add epinephrine sprays. The best method is to use a 1% solution in a good atomizer and be very careful that the spray is inhaled into the lungs and not swallowed. After about three inhalations, the mouth should be washed to remove all excess. This usually affords effective temporary relief but should not be repeated too often.

Advanced dyspnea from hypertrophic emphysema requires gas and/or mechanical therapy. The use of oxygen will always give some relief, but, unless the mechanical factors are taken care of, relief is only temporary. Oxygen mixtures of 50 to 80% are usually satisfactory. In severe cases pure oxygen with or without 30% helium may be indicated. The helium gains its effect by being a lighter gas and therefore more mobile.

Practically no severe condition will respond, however, without removal of the vicious cycle due to positive pressure. The alveoli become so distended that the elastic fibers can no longer function, and the result is a wider and wider distention of the alveoli, with a proportional narrowing of capillaries and a decrease of oxygenation.

The positive pressure is removed by actually compressing the lung and forcing the air out of the alveoli, allowing them to regain their elasticity. Belts applied to the abdomen are most commonly used. Pressure should be applied to the lower part of the abdomen and extended upward. Along with this a small amount of air in the peritoneum—just enough to arch the flat diaphragm (300-500 cc.) and no more—is of great aid. Of course, the mechanical therapy is not indicated in senile or small lung emphysema. Many cases of emphysema are complicated by bullae or cysts, which should be surgically removed. The details of this treatment must be sought from skilled chest surgeons.

SPINAL ANESTHESIA AND INTESTINAL OBSTRUCTION

To the Editor:—*Please discuss the occurrence of volvulus or obstruction following spinal anesthesia.*

Elmer J. Ball, M.D., Los Angeles.

Answer.—The use of spinal anesthetics in ordinary doses and in ordinary concentrations is seldom followed by volvulus or intestinal obstruction. However, this probably is due to the fact that most physicians administer a spinal anesthetic in relatively low concentration, that is, in a 3 to 5% solution. A full dose of procaine (175 to 200 mg.) injected in high concentration (10%) can result in abdominal distention and difficulty in voiding. If the dose is as large as 250 to 300 mg., given in 10% concentration, volvulus can develop.

When intestinal obstruction is present before any anesthetic is given, spinal anesthesia is occasionally used in an attempt to relieve the obstruction without operation. If no relief is obtained, the spinal anesthesia may be utilized for the purpose of operation. Relief from ileus due to peritonitis has usually not been obtained by this procedure, but spinal anesthesia has been effective in a case in which an adhesion had caused the obstruction. When the bowel, which had become kinked over an adhesion, was made active by the anesthetic, it withdrew itself, so to speak, from the adhesion. In another patient, a very obese woman with intestinal obstruction, spinal anesthesia produced bowel movement, but the distention was not relieved. At operation it was found that the bowel was obstructed in three or four places, with considerable lengths of bowel between the points of obstruction. Feces had come only from the terminal portion of the rectum, which was caudad to the last point of obstruction. If operation is to be carried out, determination of the smallness of the unobstructed portion of the intestine is of value in location of the point or points of obstruction. Functional abdominal distention simulating intestinal obstruction can be relieved immediately by means of spinal anesthesia, without a bowel movement, but it will recur immediately after the effects of the spinal anesthesia have disappeared. Further information may be obtained from Lundy's "Clinical Anesthesia: A Manual of Clinical Anesthesiology." (Philadelphia, W. B. Saunders Company, 1942, pp. 570-571).

TULAREMIA

To the Editor:—*On Nov. 16, 1950, I saw a patient with ulceroglandular tularemia. Before the diagnosis was definitely established I had given him two injections of 400,000 units of penicillin procaine in water, which were followed by marked regression in the lesion on the chin and regional glands. I gave him aureomycin, 1 gm. every six hours for 24 hours on December 6 and then 0.5 gm. for the next six days, but by this time he was markedly improved, and the aureomycin did not seem to produce much clinical result. The results of agglutination tests follow:*

	1:10	1:20	1:40	1:160	1:320	1:640	1:1,280
11/30/50.....	4+	4+	4+	4+	4+	3+	1+
12/27/50.....	Neg.	3+	4+	4+	4+	4+	Neg.
2/ 7/51.....	Neg.	4+	4+	4+	3+	1+	Neg.
4/ 6/51.....	Neg.	4+	4+	4+	4+	4+	4+

The titer has apparently increased, and the patient still has general malaise. I would like to know the prognosis following antibiotic therapy. Would you advise more therapy?

M.D., New York.

Answer.—Since serum agglutinins, once acquired by tularemic infection, will normally persist for the remainder of the life of the patient, this test cannot ever be used as an index of recovery or convalescence. A few persons who were infected in 1906 to 1910 and in whom the diagnosis was made in retrospect still maintain significant agglutinin titers, though they have been totally asymptomatic for 40 years or more.

General malaise may occasionally persist for several months in patients who have responded well to antibiotic treatment. Penicillin is ineffective in tularemia, but it controls well the frequent secondary pyogenic infection of primary lesions and contributes thus to a lesser incidence of suppurative regional adenitis. Weariness and malaise are best treated by time, rest, and assurance that all symptoms will eventually disappear. If malaise is severe and socially crippling it may be advisable to give a short but intensive course of vitamin B complex therapy accompanied by six or seven injections of 100 mg. each of ascorbic acid. Continuation of symptoms beyond five months occurs infrequently but is well known in tularemia.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

V 14
1951

MENOPAUSE AND OVULATION

TO THE EDITOR:—*1. What signs and laboratory evidence justify the diagnosis of menopause? 2. In its pathological physiology, is menopause synonymous with cessation of ovulation? 3. Is cessation of menstruation of two years' duration sufficient practical evidence that ovarian function and particularly ovulation has permanently ceased? Would the estimation of 17-ketosteriods or anterior pituitary hormones be helpful? 4. What is the risk of pregnancy in a married woman two years after natural cessation of menstruation?*

M.D., Pennsylvania.

ANSWER.—1. There are no specific signs or laboratory tests to indicate or prove menopause. Atrophy of the vaginal mucosa or of the endometrium would seem to be rather specific, but when women do menstruate after at least a year of amenorrhea this would not appear to be too dependable. Too many psychic factors enter into the symptoms of hot flushes for that sign to be dependable. In most cases if a woman has not menstruated for a year or two, has an atrophic vaginal mucosa, and is having regular hot flushes one can assume she is in the menopause.

2. There is some difference of opinion about the terms menopause, climacteric, and change of life. Curtis-Huffmann's Textbook of Gynecology 1950 calls menopause (climacteric, change of life) the physiological permanent cessation of menstruation, Dorland's "American Illustrated Medical Dictionary" says menopause is that period when menstruation normally ceases, the change of life. Since women can apparently ovulate (after pregnancy, for instance) and not menstruate and since they can bleed regularly (what seems to them to be menstruation) in an anovulatory cycle, we hesitate to be too specific in saying that menopause means cessation of ovulation. Certainly in the majority of cases women in the menopause do not ovulate.

3. The cessation of menstruation for 2 years would, for practical purposes, indicate ovulation had ceased and pregnancy would be very unlikely, provided the woman was in the usual age group and in the absence of demonstrable ovarian tumors or cervical stricture.

ALLERGY TO PRINTERS' INK

TO THE EDITOR:—*I have a male patient 53 years of age who in the past two years has become allergic to print in any form, especially in newspapers and paper books. About eight hours after reading he shows angioneurotic edema anywhere on the body, especially on the lips and foreskin. This lasts about six hours. I should like to know the possibility of allergy to printers' ink and what its constituents are, in order that he may be immunized against it.*

M.D., Florida.

ANSWER.—Allergic manifestations, particularly rhinitis and asthma, from newspapers have been noticed many times. It has never been definitely settled whether the ink, the paper, or other chemicals involved in the printing process are responsible. Skin tests made with an extract of the paper or with the ink have been uniformly negative. This, of course, is not surprising, since negative tests are usually obtained with simple chemical substances. Attempts to find out the composition of inks have met with resistance from the manufacturers, although when the composition was obtained the information was not helpful. It is highly unlikely that desensitization could be accomplished or would be practical in the case cited, even if the exact allergen were known.

POLIOMYELITIS PROTECTION

TO THE EDITOR:—*If a mother had poliomyelitis in childhood, will her children have any likelihood of protection as a result?*

L. C. Chadsey, M.D., Brockville, Ontario, Canada.

ANSWER.—The human offspring at birth has the same antibody titer in its blood as is present in the blood of the mother. This antibody gradually diminishes to zero during the first six months of life. Because of this phenomenon, the children of the mother referred to should expect some degree of immunity to poliomyelitis for only the first six months of life.

GLYCINE AND MYASTHENIA GRAVIS

TO THE EDITOR:—*A patient has been receiving glycine (aminoacetic acid) for the treatment of a myopathy of the myasthenia gravis type for the past five years. She has not received any ephedrine and has felt marked improvement in her dysphagia. The atrophy has not become worse, but her blood pressure has risen from 130 systolic to 230 systolic. Could the rise in blood pressure be due to glycine?*

W. J. Klinck, M.D., Lennoxville, Quebec, Canada.

ANSWER.—There is some uncertainty about the type of myopathy in this case, since muscular atrophy is not a part of the picture of myasthenia gravis, as usually encountered. However, it appears that this point is of minor concern with regard to the developed hypertension. Glycine was proposed as a treatment for myasthenia gravis by Boothby in 1932 (Myasthenia Gravis: A Preliminary Report on the Effect of Treatment with Glycine, *Proc. Staff Meet., Mayo Clinic* **7**:447 [Sept. 28] 1932). Extensive application of this therapy failed, and there is general agreement that it is without value in myasthenia gravis. The same experience has been had with its employment in cases of progressive muscular dystrophy. If the improvement in the case cited is attributable to glycine, it is exceptional.

Since glycine is one of the amino acids, it is a substance commonly taken with food by every individual. There is no reason to believe that it or any other amino acid is possessed of any pressor-like effects. It is not believed that the hypertension that developed in this patient is related to glycine therapy. Under existing circumstances, it would be proper to discontinue glycine; should myasthenic symptoms appear, one should attempt to control them with neostigmine.

INTELLIGENCE AND THE LOCALIZATION OF MIND

TO THE EDITOR:—*What is the location of the intelligence center of the brain?*

James M. Covington Sr., M.D., Wadesboro, N. C.

ANSWER.—There is no "intelligence center" in the brain. The frontal association areas, when destroyed in either animal or man, leave certain "intellectual deficits," indicating that some at least of so-called intelligence lies in this prefrontal region. The cortex involved, of great size in man, consists of the tissue lying rostral to the motor and premotor brain, distinguished histologically by the presence of a conspicuous small-celled "granular" layer. It is mostly inexcitable to faradic stimulation, and removal in monkeys or chimpanzees does not give rise to reflex changes in the skeletal muscles. When only one frontal lobe is removed, no change in behavior or the higher intellectual functions can be detected. In animals with both lobes removed, restlessness, loss of weight, great distractability and a marked tendency to shift from one activity to another are common findings. In man, after frontal lobectomy, in addition to the distractability and restlessness there is a tendency toward boastfulness and general euphoria, with lapses of judgment and decision. Fulton noted in some of his chimpanzees "a rather fatuous equanimity of spirit which one encounters in a good-natured drunkard." Brickner studied a case of bilateral frontal lobectomy in man with great care. In addition to the usual personality changes, his patient was curiously hostile toward family and friends; recent memory was variable and faulty; the patient was entirely vague concerning the date of week and month. The man was incapable of logical thinking. Moniz, the Portuguese neurologist, applied the findings of the experimental work on chimpanzees in developing his operation of prefrontal lobotomy in the treatment of neuroses and major psychoses in man.

There is no convincing evidence that "intelligence" lies in other areas of the brain, such as the occipital and temporal lobes, the cerebellum or the brain stem. The localization of mind has been a problem to man since the first days of medicine. The brain for a long time was at best considered an organ that produced mucus which came out of the nose when somebody had a cold. In Egyptian medicine the chief organ was the heart, the center of life, as we now speak of a city being in the heart of the country. Even Aristotle localized mind in the heart, the brain only serving the heart. But even now, according to Sherrington,

reference to the brain affords little help to the study of the mind. Man is in ignorance of the "how" of the tie between the brain and the mind that makes itself felt. That there is a liaison, no one doubts; but the "how" of it "we must think remains for science as for philosophy a riddle pressing to be read. As things stand we cannot be sure that some of the very terms of approach to mental health and unhealth are not still on a plane with the 'humors' of medieval medicine."

REFERENCES:

Fulton, J. F.: Physiology of the Nervous System, ed. 3, New York, Oxford University Press, 1950.

Brickner, R. M.: The Intellectual Functions of the Frontal Lobes: A Study Based Upon Observation of a Man After Partial Bilateral Frontal Lobectomy, New York, The Macmillan Company, 1936.

Goldstein, K.: The Significance of the Frontal Lobes for Mental Performances, J. Neurol. & Psychopath. 17:27, 1936.

Jefferson, G.: Removal of the Right or Left Frontal Lobes in Man, Brit. M. J. 2:199, 1937.

Sigerist, H. E.: A History of Medicine, vol. I: Primitive and Archaic Medicine, New York, Oxford University Press, 1951.

Sherrington, C. S.: Man on His Nature, New York, The Macmillan Company, 1941.

ARGYROSIS AND PARKINSONISM

TO THE EDITOR:—*A woman, now 63, used a drug containing silver nitrate for stomachache in 1916; since then she has had the blue skin of argyrosis. A few years later a tremor with parkinsonian characteristics developed in the head, tongue, lips, and left arm and it has gradually increased in intensity. Rigor and cockwheel phenomenon did not develop. The expression of the face is normal. The blood pressure is 200/100. Blood cell count, urine analysis, x-ray of the skull, and tests for syphilis did not show any abnormality. Is a diagnosis of silver parkinsonism justified, and is treatment with dimercaprol indicated?*

A. Verjaal, M.D., Heemstede, Holland.

ANSWER.—The suggestion that silver is responsible for the degenerative changes in the basal ganglions resulting in parkinsonian tremor is an interesting speculation, but such a diagnosis probably cannot be maintained with any degree of certainty since parkinsonian tremor is a relatively common condition without argyrosis. Even if the parkinsonism is the result of the use of silver, treatment with dimercaprol (BAL) after so many years probably will not be of any value. Undoubtedly the degenerative changes in the central nervous system are irreversible after this length of time.

SYMPATHECTOMY IN HYPERTENSION

TO THE EDITOR:—*I have heard that the life span following sympathectomy for hypertension is 10 years. What are the facts on this subject?*

M.D., Pennsylvania.

ANSWER.—It is practically impossible to estimate the probable life span of any given patient with hypertension regardless of whether the patient is treated by sympathectomy or in some other manner, because of the extreme variability of the disease. Some patients tolerate hypertension well for many years, while in others the disease is rapidly fatal. One can estimate the outlook much better if one divides hypertensive patients into groups according to the severity of the illness, taking into consideration the height of diastolic pressure, the stability or lability of the blood pressure, the condition of the eyegrounds, the occurrence or absence of cerebrovascular accidents, the presence or absence of impairment of cardiac and renal function. If patients so grouped are compared as to the result of surgical and nonsurgical treatment, it appears well established that the survival rate is considerably longer in the surgically treated group. For example. Hammarström and Bechgaard (*Acta med. scandinav.* Supp. 192, 1946, pp. 3-358) compared 435 nonsurgically treated patients followed for a period of 2 to 10 years with 251 surgically treated patients followed for 2 to 8 years. The mortality in their Group 2 was 18.3% in the medically treated patients and 4.6% in the surgically treated patients. The mortality in their Group 3 was 57.1% in the medically treated and 20% in the surgically treated patients. Similarly, the mortality in their Group 4 was 97.8% in the medically treated and 43% in the surgically treated patients. Similarly, Smithwick (Surgical Physiology of Hypertension, *M. Clin. North America*, Philadelphia Number, 1949, pp. 1699-1730) found that the mortality in hypertensive patients treated by sympathectomy and observed for 5 to 10 years after operation was lower than he would have estimated it to be from data recorded in the literature on patients not treated by operation. The mortality in his five groups was, respectively, 7%, 23%, 27%, 82%, and 92%. The estimated mortality without operation in these five groups was, respectively, 47 to 54%, 84 to 86%, 73 to 74%, 79 to 82%, and 83 to 91%.

SYPHILIS

TO THE EDITOR:—*A woman was treated for syphilis with colloidal mercury sulfide in 1949; she received about 20 injections. Prior to that time she had irregular treatment with neoarsphenamine. Her serology in 1949 after treatment showed a titer of 20; her spinal fluid showed a 4 plus Kahn reaction, and the gold curve was positive for syphilis. In 1950 she received another course of colloidal mercury sulfide, and again her blood serology showed a positive Kahn reaction and a 20 unit titer. Her spinal fluid taken this month showed a positive syphilitic curve. Would you consider this case Wassermann-fast, or would you advise further antisyphilitic treatment?*

M.D., Missouri.

ANSWER.—This patient should receive procaine penicillin in aluminum monostearate, 600,000 units twice weekly for a total dosage of 6 million to 12 million units. The blood should then be examined by a quantitative procedure at two-month or three-month intervals and the cerebrospinal fluid after six months. If the cell count or proteins are increased, the patient should be retreated with penicillin.

TYPHOID AGGLUTINATION TITERS

TO THE EDITOR:—*I would like some discussion on the importance of low agglutination titers (i. e., below 1:80) in the diagnosis of typhoid and the effects of recent typhoid vaccinations on the titer levels.*

Jim S. Phillips, M.D., Gilmer, Texas.

ANSWER.—The O and H fractions of the typhoid antigen each account for the development of a specific agglutinin. The O factor is said to produce agglutinins earlier and in higher titer in typhoid infection. It has been reported that agglutinins appeared in one week following typhoid vaccination and reached their peak in three weeks. After that, they diminish and may be low or absent at the end of six months. Titers for children are generally lower than in the case of adults. Even though agglutinins are absent, by the end of a year antibodies sufficient to afford protection may still be present. Therefore, absence of agglutinins in the blood does not prove a lack of immunity. An agglutination of 1-160 for either O or H in a susceptible person is regarded as significant for typhoid. A rising titer would point to a diagnosis of typhoid.

OINTMENT CONTAINING ERYTHROCYTES

TO THE EDITOR:—*Although Dr. Henry D. Coles asked only for the formula of an ointment containing erythrocytes (Queries and Minor Notes, Sept. 8, 1951, page 208), it might be appropriate to mention that the use of dried red blood cells is a very satisfactory and far simpler procedure in the treatment of indolent ulcers. Such preparations are commercially available. After the ulcer has been cleaned with a mild antiseptic, it is covered generously with the dried red cell preparation. The bandage may be left in place for one, two, or three days and even longer, unless there is pain and discomfort. This, however, is usually due to too thin a coat of the red cells. I have used this method routinely in varicose ulcers, and usually apply the dried red cell preparation before putting on an Unna boot, which I leave in place for two to three months*

Stephan Epstein, M.D.
Marshfield Clinic
Marshfield, Wis.

V 147
1951